The RUBBER AGE

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Published Twice-a-Month by

The PALMERTON PUBLISHING CO., Inc.

(Publication Office—1-8 Peace Street, New Brunswick, N. J.)

Editorial Office: 250 West 57th Street, New York City

Entered as Second Class Matter, August 24, 1927, at the Post Office at New Brunswick, N. J., under Act of March 3, 1879.

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Handling Crude Rubber

THE story of the cultivation of rubber, the coagulation of the latex, the shipment of the commodity to distant consuming centers and its manufacture into thousands of commercial articles has never failed to hold the interest of anyone who delights in the romance of business and industrial developments. But in its journey from its habitat very little has been told of the actual handling operations and methods of making shipments and deliveries at its destination. The manner of handling rubber in the port of New York has therefore been made the subject of a leading article in this issue with the thought that this particular phase of the modern story of rubber manufacturing, although long overlooked, will be of interest to those in the industry who do not daily come in contact with the purchase, trading and handling of the commodity with which they are otherwise familiar.

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Bright Outlook for Rubber Industry as Consumption Sets New Records

Healthy Situation Through Trade Marked by Estimates of a 40,000-Ton Consumption in August—Full Absorption of Inventory Losses by Factories Gives Considerable Promise for Second Half of Year

THAT the rubber industry as a whole throughout the United States is in a particularly healthy condition is evidenced on all sides by the new records in rubber consumption and tire production which it is reported will be established this month, and from other reports from Akron companies expressing satisfaction with the distinct gains made in sales.

Practically all rubber manufacturers hroughout the country are reported to be perating to the full capacity of their plants, and in the line of tires, shipments to dealers have already surpassed former records in volume. In many instances, the Akron factories have attained daily production greater by far than any records previously established. The Goodyear Tire & Rubber Company has achieved a new peak daily production of 70,000 tires as against a former record of 60,000. The total production for the entire Akron district a few years ago was only 140,000 a day.

Consumption Hits New Peak

It has been estimated that crude rubber consumption in July reached the record figure of 38,000 tons, passing the June consumption of 37,675 tons, which had previously been the highest record in the history of the industry. Authorities also figure that if manufacturers continue their present rate of production, the total consumption for August may reach the remarkable figure of 40,000 tons. Last year's record consumption month was March with 36,141 tons. That of 1926 was August with 34,533 tons.

The total crude rubber stocks on hand and afloat to the United States at the end of April this year totaled 147,069 tons but have decreased to 130,197 tons as of June 30, and with the high July consumption and moderate imports this figure on the 31st of July was probably considerably lower. Coupled with the high production schedules prevailing in the factories, the automobile production in the United States and Canada has also established new high records. While there is a slackening to be expected in automobile production during the fall and winter, Ford and several of the General Motors units are planning a steady increase, and are still far behind in deliveries on orders in hand.

The financial statements of the various rubber companies for the first six months of the current year generally show a sharp decline in profits and in a number of instances registered a distinct loss, but red figures have been generally expected and in view of the fact that practically all of the companies took their entire inventory losses and absorbed them in the first half year's statements, it is a credit to the industry that these red figures were not even larger. The drop in the crude rubber market plus the reduction in tire prices hit the inventory values of the larger companies severely, but there has been a rebound in the volume of unit sales which in several instances will compensate the companies, in part at least, for the shrinkage.

There is a general feeling throughout the manufacturing industry, which is reflected in the statements accompanying the half year's financial reports, that the second half of the current year holds considerable promise, and that low material costs and a steady volume of unit sales will entirely compensate the industry for the hectic conditions under which it labored during the first six months.

In crude rubber trading circles there has been noticeable improvement not only in the interest manifested from factories in their demands for crude rubber but the statistical position of the commodity has improved almost to the point where further reduction in the price per pound is thought improbable, even in the face of what may be prophesied will happen on November 1. Preliminary surveys made by the rubber restriction authorities in British Malaya and prompted by the request of the Rubber Growers' Association of London show that roughly 58,000 tons of unexportable rubber had been accumulated on the plantation estates up to June 30.

Surplus Stock Not Feared

The F. R. Henderson Corporation predicts that this figure will increase to approximately 75,000 tons on November 1, and even the most pessimistic of the rubber statisticians are now inclined to believe that actual dumping of surplus stock on the market on November 1 will not reveal so enormous a tonnage as cannot be conveniently absorbed without dislocating the market.

HOW RUBBER HISTORY IS NOW BEING MADE

Estimates by authorities in the industry place the total consumption of rubber in the United States during June at between 38,000 and 39,000 tons. If this transpires, it will surpass the June record of 37,675 tons and will set a new mark in the history of the industry. It is also predicted that increased tire production during August will bring consumption up to the 40,000-ton mark.

The financial status of all manufacturing companies is expected to be greatly improved during the last six months of the year. Inventory losses due to the drastic drop in crude rubber prices have in practically all cases been written off, and the second half of the year promises to be highly profitable in view of the rapidly mounting sales and the stability of crude rubber prices.

Mr. F. R. Henderson, of the Rubber Exchange of New York, in a review of the week said in part:

"There is considerably more trade interest in the rubber market, and this is occasioned by fresh reports from tire manufacturing centers of an unusually high rate of manufacturing for this season of the year. Indications point to a consumption of 40,000 tons having been reached in July, and preparations are apparent for an equally busy time during August."

W. S. Hammesfahr, of George H. McFadden & Bro., in summing up the rubber market also calls attention to the increased activity in tire manufacturing, and stated:

Tire Orders at High Level

"Advices from consuming centers are to the effect that orders for tires are still coming in at a high rate and consequently tire shipments from Akron and other centers are going on at a correspondingly fast pace. Manufacturers are also reported to have been buying rubber steadily, particularly in Singapore and New York, and to a somewhat lesser degree in London.

"Reviewing these exports we find that the British Malayan figure represents about the average; Ceylonese shipments are irregular as usual, and the figure representing Dutch East Indies is somewhat on the high side. On the other hand, the United Kingdom figure is very low.

"Official advice has been received from the East that the total Malayan shipments during July amounted to 30,405 tons. This is due to the fact that considerable quantities of rubber ready for shipment during June was held back in order to benefit by the export tax reduction which went into effect July 1.

"Foreign imports into Singapore amounted to only 13,383 tons, which figure is approximately 3,000 tons less than June importations into Singapore and confirms our often stated belief that Dutch native rubber is not increasing in volume.

London Stocks Decline Further

"In this connection, we are informed that London stocks by August 11 will again have decreased about 1,500 tons. Should this be the case, stocks in the United Kingdom will be below 34,000 tons.

"Evidences are accumulating that the position for actual rubber is tightening up considerably. The best illustration is that yesterday while August standard quality was offered on the exchange at 19.40c without finding buyers there were bids of 20c for rolled brown crepes in the market. This particular grade should at the present price level sell at a discount of 2c, aginst standard qualities, and other grades which also should sell at a discount are actively inquired for at the full standard quality value, and from time to time bids higher than standards are heard."

Firestone Denies Concession "Closes Door" on Liberia Trade

Characterizes Buell Report as Incompetent and Political Propaganda in Answer to Charges of Monopoly and "Peonage"—Members of League of Nations Mandate Commission Support His Reply.

CHARGES that the Firestone Tire & Rubber Company, through the concession granted it by the Liberian Government, has closed the door commercially for the Negro Republic and means eventual confiscation of land and forced labor akin to slavery, have been made in a report which has been filed by Henri Junod, president of the International Society for the Protection of Natives, with the League of Nations at Geneva. The charges are vigorously denied by Harvey S. Firestone, Sr.

M. Junod's protest is based upon investigations made by Dr. Raymond Buell, Harvard professor, who recently published the charges in a report made under the auspices of the Foreign Policy Association and parts of which have been reprinted in his recent book entitled "The Native Problem in Africa."

It is charged that the program alleged to have been forced upon the republic will eventually result in confiscation of native owned lands and subsequent peonization of the former owners by American capitalists.

Hoover's Name is Mentioned

Mr. Hoover's name, as former Secretary of Commerce, has also been brought into the matter. Buell asserts the acceptance of the terms of the loan made by the Firestone company to the republic resulted only from pressure brought to bear by Mr. Hoover and the United States State Department. He asserted that at the commencement of the negotiations the Liberians were unanimously opposed to the loan.

Liberia, according to Buell, was having trouble with France at the time the loan was first offered. The Liberian government, he says, was given to believe that if it desired Washington's support against France in the matter, it had better accept the terms of the Firestone loan.

Professor Buell apparently criticizes Mr. Hoover for his alleged sanction of the Firestone Rubber Company's loan, which this author considers was forced on Liberia and resulted in that country resorting to forced labor to insure production that would effect repayment. This occurrence is the only known basis for the attack on Mr. Hoover, but how it could be tantamount to the promotion of slavery or how it has or could come before the League's Mandate Commission apparently was not specified in the press dispatch from Genoa.

A number of the members of the League of Nations Mandate Commission have since criticized the report and expressed indignation that such report be made the vehicle for political invective.

Dr. William E. Rappard, formerly of the Harvard faculty, once Secretary General of the International Red Cross, lately rector of the University of Geneva, and now one of the leading members of the League's Mandate Commission commented on the attack. "The commission has not made any comment on Professor Buell's book and never will make any on Liberia," he said. "The commission has nothing at all to do with Liberia. The author of the accusatory dispatch seems to think that Liberia is a country administered under mandate by some other country, whereas, of course, Liberia is an independent republic and a member of the League of Nations."

Dr. Harold A. Grimshaw, another member of the Commission, also criticized the report.

Harvey S. Firestone, Sr., characterized charges lodged with the league of nations at Geneva, regarding the $1,000,000 loan made between Liberia and the Firestone Tire and Rubber Company as propaganda, both European and political. He denied that the terms of the loan, "closed the door" commercially for the negro republic, and would eventually lead to confiscation of land and a state of peonage among the natives.

"There is absolutely no foundation to the charge that the loan closes the door commercially on the republic," Firestone declared.

"As the Firestone company controls only 1,000,000 acres in Liberia, and there are 42,000,000 acres of available land, it is obvious that no such scheme is contemplated," he added.

Liberia's Development Rapid

Mr. Firestone pointed out that in the last three years, rate of development in Liberia had exceeded that in any other country in the world.

"If peonage means that proper wages are not paid workers and they are not free to leave their jobs whenever they may choose, no such state of near slavery will grow out of the loan," Mr. Firestone declared.

He stated that accusations that the loan was consummated only after pressure was brought to bear by Hoover and the state department were propaganda against the presidential nominee by his political enemies.

Handling Crude Rubber Arrivals *at the* Port of New York

With No Recognized Public Warehouses for Exclusive Storage of Rubber, Most of the Arrivals Are Held at Dock Warehouses—Sampled and Weighed Before Delivery is Made—Trading Practices Explained

THE handling of importations of crude rubber at the various ports of entry in the United States is greatly facilitated by the absence of any customs duties on rubber which would necessitate sampling and other delays incident to clearing through the custom houses. The task has been further lightened by trading rules laid down by the Rubber Trade Association, the New York Rubber Exchange and the Rubber Association of America, Inc.

Upon arrival by steamer in New York harbor rubber may be landed at any one of the several piers. The largest share is landed at the Staten Island piers of the American Dock Terminal Company and at the Brooklyn piers of the Bush Terminal Company, arrivals being about equally divided between these two points. These two terminals probably account for 80 per cent of the New York arrivals, and for the same percentage of the amount stored in New York at any time, owing to the vital fact that a large percentage of steamers arriving from the East discharge cargoes at piers owned and operated by these terminal companies.

From these piers rubber can be delivered or removed by lighters, and cars can be loaded for inland shipment with the trucking or lightering and loading charges absorbed by the railroads. Quantities are also discharged at other piers in Brooklyn, Hoboken and Jersey City. The fireproof warehouses on Staten Island have the lowest insurance rate which is some advantage. Storage charges at all docks are identical at the same conference rate. The cost for storage with insurance plus interest on investment is about ¼ cent per pound for the first month and ⅛ cent per pound for each additional month.

Unlike London, New York has no recognized public warehouses for storing rubber. Probably 80 per cent of the rubber held in the city is normally at the two docks named above. Smaller quantities are usually held at Hoboken and Jersey City for short periods before shipment to factories. Dealers usually hold small lots for quick shipment at downtown warehouses in New York. Stocks held by speculators are usually held in the dock terminal warehouses. The warehouses where rubber is stored are general warehouses and not used for rubber alone, and there are no published records of quantities held in these warehouses from time to time.

As rubber is unloaded from the steamer onto the pier, the packages are checked for marks, serial numbers, condition, etc. It then, subject to customs inspection, passes under jurisdiction of the terminal company, and notice of arrival goes to consignee. There are cases where long trade connection between the foreign shipper and the dealer is so satisfactory that the dealer will take delivery without weighing or sampling, but this is unusual and checking of quantity and quality of the consignment usually takes place.

Only a few New York rubber dealers have employees to supervise the weighing and do the sampling, the opening and repacking of cases being performed by longshoremen paid at the rate of $1.10 per hour. For most dealers this work always, and its supervision customarily, is performed by the recognized weighmasters. There are a large number of firms engaged in this business in New York and about a half dozen of these companies specialize in rubber. The weighers and samplers are paid their union scale of wages, which at present is $50.00 per week. Samples are taken from 10 per cent of the cases and sent to the dealer, and the net weight is at the same time checked on 10 per cent of the cases and the results reported to the dealer consignee.*

If the quantity agrees with the bill of lading, and the quality sample agrees with specifications of the contract, the dealer "passes" the sample and takes delivery of the rubber. If not fully satisfied, the dealer may call for a further 10 per cent sampling and weighing. If finally not satisfied as to quality or quantity, he will notify the New York representative of the shipper to that effect.

The shipper is customarily a foreign rubber dealer since producers of rubber sell through local brokers to dealers

Loading Rubber from Carloading Platform at Pouch Terminal, New York.

Photos by Courtesy of American Dock Terminal Co., New York.

Method of Transferring Rubber from Pier to Warehouse for Temporary Storage.

in their local markets. The large foreign dealers are represented in New York by commission brokers who in addition to selling to New York dealers and sometimes to manufacturers, look out generally for the interests of their principals. In case the quality is considered unsatisfactory by the New York dealer, the broker representing the foreign dealer may see fit to make an allowance on the basis of the samples already drawn. On the other hand, he may have additional 10 per cent sealed samples drawn by the recognized weighmaster at the terminal who at the same time draws an open sample to accompany the sealed sample, and the case may have to be arbitrated according to the terms of the contract, either in London or New York. The broker will not open the same cases opened by the samplers for the New York dealer, as inferior quality rubber might be "planted" in such cases during first sampling.

In case of arbitration with a shipper from the Middle East, the case is nearly always settled at New York. London shippers often require samples sent there for arbitration proceedings. In New York the result of the arbitration may be appealed, the appeal decision being absolutely final. There are very few cases of resort to arbitration.

Rubber in Storage at American Dock Terminal Store No. 1, New York

Generally speaking, the rubber is received in good shape considering the long distance it has traveled. On standard quality rubber there is usually between ¼ per cent and ½ per cent shrinkage; on off-quality grades of plantation rubber the shrinkage may run up to 1 per cent. Claims for quality or quantity are practically nil; shippers send rubber measuring up to the type specified and sometimes send even higher grade rubber. The dealer usually "passes" his sample and remits by check drawn to the seller's New York representative. Frequently such claims for quality as are made are settled by negotiation of an agreed allowance between the parties.

Plantation rubber is received packed in veneer cases, in whitewood cases, in burlap or occasionally in matting, the latter being now very unusual. Manufacturers prefer the veneer cases, and often specify rubber packed in such cases. A considerable amount of Dutch state rubber is already being packed as called for under the recent regulations of the Rubber Association of America, with the rubber completely protected by a careful wrapping of rubber of the same quality. British shippers seem to be lagging behind Dutch shippers in conforming with the packing desires of American buyers, but after existing stocks of rubber in warehouses in London and the East have been turned over, improvement in this respect is anticipated. Veneer cases are somewhat lighter than whitewood cases. Much of the rubber imported direct by manufacturers from their own plantations in the East and from Singapore buying offices is in burlap bales. Baled rubber is, however, more subject to damage from heating than rubber packed in cases.

If the rubber is badly damaged during the sea voyage by wetting, by heating from being packed near boilers, or by contamination with oil leakage from the cargo, recourse may be had to the shippers or the insurance company insuring the rubber. Frequently such cases are settled by negotiation of an allowance for the damage; sometimes the damaged rubber is sold at auction by the insurance company prior to settlement of the claim.

Small Shipments Are Consolidated

If a dealer has several small lots of rubber at separate docks he may have to consolidate them, and truckage expense is fairly heavy. Concentration of small lots is usually eliminated by selling to another dealer. Sales to factories are customarily in carload lots or over in order to get the lowest freight rate. The minimum carload is about 17 tons, and the maximum about 35 tons.

Some New York dealers maintain branch offices or broker representatives at Akron, Boston, Trenton, Los Angeles, and other manufacturing centers. Others do business entirely over the long-distance telephone with factory buyers. The dealer may sell the rubber to another New York dealer, he may sell it on the Rubber Exchange of New York, or he may sell to a manufacturer. The contracts are almost invariably made subject to the rules of the Rubber Trade Association of New York and the Crude Rubber Trading Rules of the Rubber Association of America.

In case of a sale for immediate shipment to a factory, the dealer may in case of several small lots at separate warehouses issue instructions to the terminal companies to deliver to the trucking company for shipment on a specified railroad to the buyer, the order covering the details as to marks, serial numbers, weights, number of cases, etc. It is more common for the instructions to be issued for delivery direct to the railroad, as several rail lines give free lighterage and trucking service from the steamship terminals to the railroad freight yards on carload lots. In the latter case, a lighter from the railroad company pulls up alongside the pier where the rubber is warehoused. The lighter has to take any available berth and if more than 100 feet from the freight, the dealer might have to pay any additional loading expense. The captain of the lighter presents the order to the delivery clerk at the terminal. The cases are checked upon loading and receipt issued, and the same procedure followed when unloaded at the rail terminal and when loaded on the car. Upon receipt of the signed B/L. from the railroad, the dealer forwards this document with bill to the factory.

Rubber Also Weighed at Factory

At the factory, the rubber is weighed and inspected by factory officials. Sales to large factories are usually f.o.b. cars New York, the factory paying rail charges. Small factories buying less than carload lots buy the rubber "ex dock," New York, and pay all forwarding charges.

In case of sale to another New York dealer for immediate delivery, a delivery order on the warehouse is issued to such dealer. If the sale is for future delivery, in which case the transaction is recorded with the Rubber Trade Association of New York, the seller may decide to issue a "Transferable notice," notifying the buyer that within 5 days tender will be made in accordance with the contract. Meantime the buyer may have resold to another dealer, and so on, until sometimes ten or more parties may have dealt in the same lot of rubber. The transferable notice in such case is passed from buyer to buyer, no party being allowed to hold it longer than one hour, until it reaches the last buyer, who returns it to the first seller and takes delivery. Payment is made by the last buyer and the con-

(*Continued on page* 497)

A Row of Moulded Rubber Shoes Made Recently by the Riddock Process

Experiments With Moulded Shoes

Many Attempts Have Been Made to Produce Practical Moulded Rubber Footwear in Imitation of Leather—Recent Experiments Have Not Been Able to Overcome Lack of Porosity

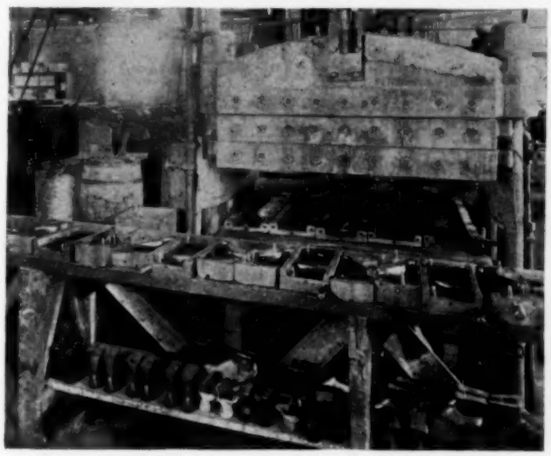
COMPETITION between commodities and industries instead of wholly within one industry, has already been mentioned as one of the outstanding features of competition today. An interesting example of it is seen in the development of a moulded rubber shoe made to imitate a leather shoe, which, while it has never been a success commercially, is worthy of description for the possibilities it reveals.

The standard lines of rubber footwear, with the exception of tennis, as they are marketed today, are sold for their protective qualities and warmth during cold and stormy weather. They are truly named "overshoes" because they are made to go over the leather shoe. Unlike the commercial rubber heel and sole which compete directly with leather, they are not made by the moulded process but are vulcanized in heated chambers under pressure.

Many years ago an American named Doughty took out many patents on making a moulded rubber shoe, and the Marvel Rubber Company in Rhode Island was the first commercial attempt to put this type of shoe on the market. It proved to be too expensive, and the project was abandoned. Of course, this product was not trying to compete with the leather shoe, but with the regular rubbers and overs. The difference was in the process of manufacture.

The process shown in the accompanying photographs was an attempt to make a shoe from rubber composition which would have the qualities of the leather shoe and compete directly with it. The product was known as the Riddock shoe. Aside from the material feature, which we will discuss later, the product possessed many advantages over the leather shoe. Being solid and made in one piece it is much cheaper to manufacture and offers more foot comfort due to the absence of stitching, wrinkled linings, rough insoles and counters.

Leather, being the skin or pelt of an animal, possesses peculiar properties not found in any other commodity. The notable characteristic of all hides and skins is not so much chemical composition as physical structure. They are made up of a vast number of minute fibres intricately interlaced, which present a most interesting picture under the microscope. This structure gives the hide its remarkable flexibility and strength while leaving it sufficiently porous so that it can breathe, permitting air and moisture to pass through.



Moulds and Press Used in the Experimental Production of Moulded Shoes

Rubber, of course, is a perfect insulator and as such is waterproof. Hence the difficulty in the Riddock shoe. While the process was successful in every way and the shoe proved to be practical to make and durable to wear, the lack of porosity in the material caused undue perspiring of the

Various Stages in the Manufacture of Moulded Rubber Shoes Under the Riddock Process

feet. Thus the real problem resolved itself into one for the laboratory. Is it possible to produce rubber in some new form and impart to it the qualities of leather? We make sponge rubber successfully, but in so doing remove much of its tensile strength and make it too soft for this purpose. Would it be possible for the chemist to produce a rubber compound which would simulate the tiny cells of the leather hide?

Until that is done this interesting experiment will be nothing more than just an experiment. Even in this light it is remarkable how well the inventor has imitated the finish, appearance, and wear of the leather shoe.

Another Chance for the Crepe Sole

By Austen Bolam

A FEW years ago it appeared as if the crepe rubber sole had come to stay and that with judicious publicity it would create a new era in the shoe market. Later investigations would show, however, that these first promises have not materialized. The public has not been sold to any great extent and the opportunity has lapsed, if not completely, to a very considerable degree.

The early advertising of the crepe sole was poor and lacked conviction. Evidently the man who wrote it didn't wear crepe soles himself or had failed entirely to grasp their great advantages. At any rate, even this publicity appears to have died for want of nourishment. Now that rubber prices have been so sharply reduced, this may be the time to revive the crepe sole in a big way.

As anyone who has regularly worn crepe soles will testify, this form of rubber sole has tremendous advantages over leather or any vulcanized type of rubber. Not alone as a "sport" sole but for all the year round wear, I prefer it to any other. I have worn crepe soles for the past five or six years and find nothing to approach them for comfort or durability. As a matter of cold, hard fact, with heavy country and town walking, over all kinds and no kind of roads, a crepe sole will outwear at least three leather ones.

Crepe started out wrong. Originally posing as a sport proposition, it has never outlived the stigma and while I am told there is still a limited demand for sports wear, the windows of countless shoe stores bear mute but emphatic witness to its waning popularity. Recent enquiries in stores of several cities failed to find a pair in stock although most dealers "expected to have them later on." As a matter of cold, hard fact, most of last season's leftovers finished on the bargain counters.

Apart from durability, crepe is the most comfortable of all soles. It cushions the feet against hard or rough roads, protects them against burning or icy pavements, "gives" with the shoe as you walk instead of pulling against it as does the leather sole and, apart from some slipping in mud, is the ideal footwear for all seasons. This slipperiness can, I feel sure, be corrected by the makers.

Crepe soles look clumsy—but aren't—and their light color is against them. Repairs are hard to obtain and unnecessarily costly. A popular "while you wait" store asks $2.75 for new soles but, incidentally, I have found that ordinary tire "putty" makes good durable minor repairs. Granting, however, these small drawbacks against their many advantages, I still believe that a properly educated public would respond quickly and generously to a well-directed campaign of sales and merchandising publicity. The lower price at which the soles could now be sold would be an important and helpful factor.

As an old rubber publicity man, I have followed the career of crepe soles with close attention and am certainly disappointed to see so poor a result. I still believe it is not too late to create the demand but it will have to be gone about in a different way. If it is true that the former campaign was directed from "across the pond," this may account for its failure to interest the American public.

R. & H. Hydrocarbon

A new asphalt hydrocarbon in two grades has recently been announced by Roessler & Hasslacher Chemical Co., New York. This material is produced from selected Venezuelan crude asphalt to assure uniformity of quality.

The specifications of the two grades are as follows:

	LM	HM
Penetration at 32 200/60	3½	3
Penetration at 77 100/5	5	4
Penetration at 115 50/5.....	7	5
Melting point (Ring & Ball).	275-280°F	295-300°F

The manufacturers claim that either grade will break up readily and work smoothly on the mixing mill.

Rubber Cultivation in Cochin-China

THE government of Indo-China compiles no periodic statistics other than export figures covering the local rubber industry, but the development of rubber cultivation in Cochin-China has shown a steady increase. The Chamber of Commerce of Saigon has on occasion tabulated certain interesting data relative to rubber growing in this colony and the rubber planters' syndicate, including the majority of the leading growers, has in the past issued statements of the estimated acreage and productive trees of the colony's plantations. Information of this sort has not, however, been brought up to date, says the Department of Commerce.

The latest available figures, culled from Le Courrier Saigonnais, a local daily, refer to the year 1926, during which, it is averred, some 16,000 hectares of hevea were planted in Cochin-China, raising the total area of plantations to 51,000 hectares (126,000 acres). The total does not, of course, include new or uncleared concessions, nor does it comprise the apparently more than 20,000 hectares of land for which the grants were sought or pending.

10 YEARS AGO

Items Reprinted from August 10, 1918, issue of The Rubber Age

THE War Industries Board requests a curtailment of 50 per cent in the manufacture of pneumatic tires, exclusive of government contract requirements . . . Crude rubber is to be allocated during August and September on the basis of 3/8 of one-sixth of factory consumption during 1927 . . . The War Service Committee of the Rubber Industry holds a luncheon at the Waldorf-Astoria at which 500 rubber men were present, representing about 300 manufacturers . . . . The Rubber Association of America moves from 17 Battery Place to 52 Vanderbilt Avenue, New York City . . . A rubber section of the War Industries Board is established with Harry T. Dunn, president of the Fisk Rubber Company, as its head . . . Major T. L. Robinson, former president of the Republic Rubber Company returns to Washington, after a period of service with the Red Cross in Italy . . . W. H. Yule is appointed head of B. F. Goodrich gas mask and balloon departments . . . Ajax Rubber Company takes over the four-story building owned by the American Society of Civil Engineers, New York City . . . . Hardman Tire & Rubber Corporation is reorganized under the name of the Hardman Rubber Corporation . . . Sales of Mason Tire & Rubber Company in June totaled $302,123 . . . B. F. Goodrich Company finished the best half year in its history on June 30, with earnings totaling $7,150,000.

Where Art Meets *the* Rubber Industry

Rubber Tiling in Classic Designs Meets the Approval of Interior Decorators

The Lounge of Finchley's, Fifth Avenue, New York City.

WITHIN the last five years rubber tile flooring, long associated with linoleum and oil-cloth, has come into its own in successful competition with the finest of marble and hard-wood parquet floorings. It is now associated with the most palatial of establishments and adds attraction to the most modern homes, public buildings and business offices.

It has been a long struggle over a long period of years for the rubber manufacturing companies to disassociate rubber flooring from the cheapest of old-time linoleum and oil-cloth. Recently an energetic campaign, helped materially by the progress made by the rubber industry in developing attractive designs of a durable and practical material, has brought the general public to a proper appreciation of the beauty and effectiveness of rubber flooring. Today, as emphatically shown by the illustrations accompanying this article, it not only has its practical uses on the floors of hospitals, public libraries, offices, etc., but it graces the studies and grand halls of the most exquisite of homes because of its real beauty combined with the qualities of comfort, cleanliness and excellent craftmanship.

So pleasing to the artistic eye has the new type of rubber flooring become that it has been a frequent subject for the art publications of both America and Europe. We find the *Architectural Forum* editing and publishing, in conjunction with one of the large American manufacturers, a brochure on "Period Adaptations for Modern Floors," featuring the installations of harmonious rubber flooring with various period furnishings in the most accepted interior decorative style.

Lately the Rubber Growers' Association, of London, as a major part of their propaganda for the greater utilization of rubber products, has laid particular stress on rubber flooring in all the many exhibits of rubberware held throughout the United Kingdom and the Continent. As a result a great many prominent buildings in Great Britain have adopted rubber tile flooring, among them being the new Lloyd's Building in London.

Among the well-known European hotels which have been equipped with rubber tiling and flooring are Claridge's and the Cambord in Paris, the Savoy in London, Grand Hotel Metropole in Brussels, Regina in Interlaken, Continental in Stockholm, Savoy in Christiania and the Grand at Koenigsberg.

In seeking artistic decorative designs the manufacturers have studied the finest types of inlaid flooring in existence in the old palaces and houses of Europe and have copied the patterns associated with the architectural schools of Grecian and Roman art. Chandor House, Portland Place, London, has probably one of the finest examples of the inlaid alternating squares of cream and dark grey marble designed and installed by the famous Robert Adam. The same pattern in the same colors has now been duplicated in rubber tiles by one of the leading American manufacturers.

The Chateau du Champ de Battaille in Normandy, France, has a rich pattern in marble flooring, reflecting

Foyer of Private Apartment, New York.

An Exclusive Men's Shop, New York.

Corner of a Club in Union Hill, N. J.

the colorful school of the Renaissance period. This design has also been successfully copied in rubber. Even the elaborate designs of the Italian schools of Florence and Venice have been successfully reproduced and relaid in American buildings. The simple but quietly ornate wood flooring designs of the Tudor and Elizabethan periods have in turn found their counterpart in recently developed rubber patterns.

Not only has the rubber tile flooring manufacturer reproduced in his product the coloring and design of the various schools of art in this direction but the various marblé and mosaic effects have been faultlessly duplicated.

Office Buildings Adopt Rubber Tiles

In the United States the New York Federal Reserve Bank has over 200,000 square feet of flooring in rubber tiles. The *New York Times* Annex, the American Radiator building and the S. W. Strauss building in New York, the National Shawmut Bank in Boston and the Federal Reserve Bank of Cleveland have also adopted rubber flooring in general throughout. Among the clubs, the Elks in Columbus and St. Anthony's, New York, are excellent examples of the growing popularity of rubber flooring in club corridors and lobbies. The number of important hospitals and schools using it is steadily increasing and in the modern construction of theaters, the specifying of rubber flooring is the generally accepted practice.

While progress has been slow in the case of private homes, apartment houses have been quick to find in rubber flooring not only a comfortable covering but a welcome insulator against noise, and the higher grade shops are almost universally adopting it, especially when there is an effort to sustain a tone of quiet and exclusiveness. A striking example of the latter is found in the adoption of rubber tiling throughout in Finchley's Fifth Avenue shop, New York.

The utility of a floor covering is best judged by its practicality as a base for whatever is placed to stand in the room. Marble, tile and wood have been used with beautiful effect. Today, the modern rubber tile flooring offers to the architect a flooring material which possesses all the decorative qualities of these older materials and has certain physical qualities in addition which make it particularly desirable for a large variety of purposes. It is more easily workable than wood, soundless to the tread and has excellent wearing qualities. Not least important is the economy effected in its installation and the ease of its maintenance.

Effective for Heavy Duty Service

Rubber tiles are especially adaptable in modern building developed for a distinctly utilitarian purpose and where a certain amount of decoration is appropriate, such as lobbies and reception rooms of hotels and office buildings, in banks, theaters, churches, restaurants and shops. Special rubber tile is sometimes demanded and found most effective on special occasions where floors are subject to heavy duty service.

For general floor use, rubber tiles are now manufactured in three standard thicknesses, 3-16, 1-4 and 3-8 inches. They are available in a wide variety of sizes, from 6x6 inches as used in bathrooms, elevators, kitchens and other small areas, up to 24x24 inch size, for pattern designs in large rooms. They are also furnished with a cove base and wainscoting of the same grade and color. Such rubber cove bases act also as bumpers and prevent marring.

The chief manufacturers of rubber flooring have gone direct to the building profession in their selling program and have actually fortified their own sales organizations with practical men from the building trades, who are thoroughly conversant with floor construction work.

International Tire Trade in 1927

THE international tire trade in 1927 amounted to almost nine million casings. That is, the principal tire producing countries, taken together, exported about that number. In 1921 such exports amounted to less than three million casings. From 1921 to 1927 tire exports have shown an average increase of one million casings, although for individual years this average does not hold.

The United States' share of this trade, the Department of Commerce points out, was 32 per cent in 1927, a larger share than for any year back to 1922. Although other countries increased their tire exports in 1927, the United States increased more rapidly and hence was able to come into first place. The shipments from the United States totalled 2,811,000 casings out of a world total of 8,856,000. France was second with 2,112,000 and Canada was third with 1,679,000. The United Kingdom was next with less than one million.

The United States and Canada taken together, which is the normal thing to do since practically all the tires exported from Canada are from American branch factories and bear American trade names, supplied a trifle over one-half all the tires moving in international trade.

International Competition Remains Keen

Competition with international tire trade remains very keen. Prices of the dominant competitive make in each market are usually met by the other principal makes on the market. Price agreements between the principal competitors are common but some of the markets have been disorganized by price cutting and, more frequently, by the granting of secret rebates. The dealer profits in some of the markets have been limited to the annual rebate on sales granted by the manufacturer. Tire dealers associations have been established in quite a number of countries.

Subsidiary factories are becoming more common each year. Dunlop factories are located in the United Kingdom, United States, Canada, France, Germany, Japan, and Australia; during 1927, the relationship between Australian and British Dunlops was strengthened.

Michelin factories now exist in France, Italy, United States and United Kingdom; the British subsidiary was established in 1927.

The large participation of American capital in the Canadian rubber industry continues, and certain American companies before 1927 were interested in French and German tire factories. Branch factories were established by some American companies in the United Kingdom and Australia in 1927. Protective tariffs on tire imports into certain countries tend to cause additional foreign subsidiary factories to be established. The result is increased competition in the markets affected. Probably this tendency will in time also reduce international trading in tires to some extent.

Michelin, Dunlop and Pirelli with the best-known American makes dominate the world's tire sales. Michelin is probably the most important single tire exporter, about half its sales being for export. British Dunlop with its highly developed foreign factory organization and British Empire tariff advantages is hardly less important. Italian Pirelli is also an important factor along with Belgian Englebert, French Bergougnan, and German Continental.

Europe remains as the most important consumer of imported tires. The 1927 position of the United States was outstandingly strengthened in Central Europe with almost as important an improvement in South America and Asia.

A comparison of exports of automobile inner tubes from manufacturing countries is not possible as automobile inner tube exports are separately reported only in statistics for the United States and Germany.

New England Sees New Trends in Its Rubber Industry

With the Drifting Away of the Manufacture of Tires, the Section Which Cradled the Rubber Industry Has Turned to Footwear and Mechanical Lines to Strengthen Its Position

PERHAPS the changes in the rubber industry in New England seem more pronounced because of the fact that the beginnings of rubber manufacture were made there and many of its mills have become well seasoned by the ravages of time. Yet age has not proven to be any guaranty of perpetuity in this instance. Not many months ago the last of the Forsyths passed on. Thomas A. Forsyth had not been engaged in the rubber industry for the past twelve years, but he outlived the company with which his family was identified, the old Boston Belting Company, which made mechanical rubber goods for over a hundred years and dated its existence back to the beginning of the nineteenth century.

New England is still supreme in the rubber footwear industry and most of the old concerns, together with a sprinkling of new ones, flourish today either as independent concerns or as units of the United States Rubber Company.

It is natural that many of them should bear the name "Goodyear." The story goes that after the discovery of vulcanization by Charles Goodyear he licensed different manufacturers to use the process and many of them took his name. Thus, in Naugatuck, Conn., we have the Goodyear India Rubber Glove Company and the Goodyear Metallic Rubber Shoe Company, both now operated under United States management. The name Wales-Goodyear was originated to obviate some of the confusion caused by so many companies bearing the name of Goodyear. The prefix "Wales" was for Thomas C. Wales, one of the early pioneers of rubber footwear.

Shoe Manufacture Started in 1830

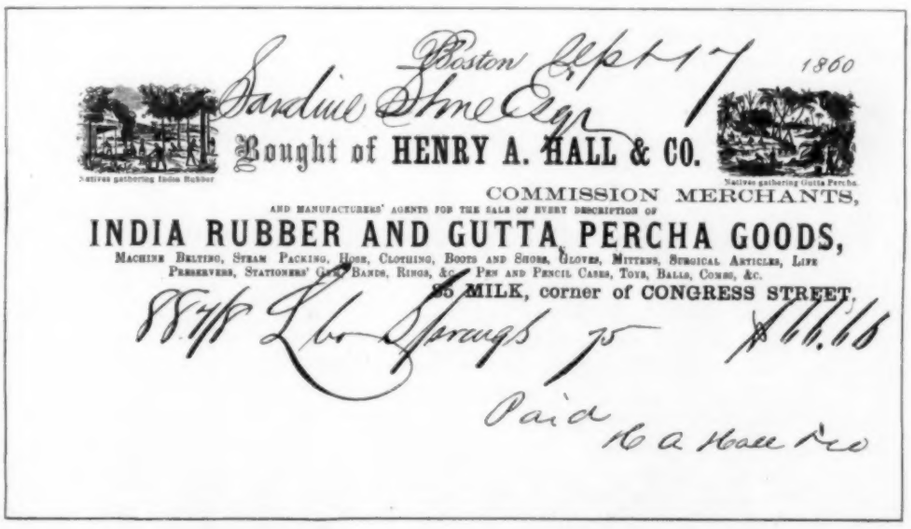
A Boston merchant in the early eighteen hundreds, Mr. Wales bought shoes fashioned of unvulcanized india rubber which were imported from Peru, and later fashioned them over lasts to make them more shapely. In 1830 he went into partnership with Benjamin C. Harris, a former employer, and as Harris and Wales conducted a wholesale business in boots, shoes and rubbers.

Financial reverses came only to be succeeded again by prosperity and in 1866 Mr. Wales once more plunged actively into the Brazilian shoe trade, associating with Captain John Bertram, a ship owner of Salem, who agreed to put two vessels into the Brazilian service on the condition that Mr. Wales become his agent. Captain Bertram empowered Mr. Wales to have modern shaped lasts made and sent to Brazil, and on them the natives formed better shoes than they had been able to produce on their own crude clay models. The new shoes were called "fabricas" and met with immediate favor, 500,000 pairs being sold in the United States and Europe within a year. An important invention which Mr. Wales patented in 1858 was the waterproof and cold-proof overshoe, made of cloth and rubber and named by him the "Wales Patent Arctic Gaiter."

Other Goodyear companies sprang up. The Goodyear Rubber Company of Middletown, Conn., dates back to 1853 as an independent company. This company which made the "Gold Seal" line of rubber footwear for years is not now operating. The Phillips-Baker Rubber Company of Providence, R. I., successor to the old Bourn Rubber Company, manufactures rubber footwear under the brand "Goodyear Rubber Company, Boston." The former owner, the late Governor Bourne of Rhode Island, who lived to the ripe old age of 95, acquired this trademark years ago and it is still used in the same factory where he operated for years.

U. S. Rubber Units Started Privately

Most of the present units of the United States Rubber Company in New England were started as independent factories by outstanding industrial leaders in the latter half of the nineteenth century. George A. Lewis, of the Wales Goodyear, later of the Beacon Falls Rubber Shoe Company, in Connecticut, did much to build up the industry in the Connecticut valley. Then there was Colonel Colt of the National India Rubber Company, Bristol, R. I., now the "Keds" unit of the U. S. Rubber Company; Schaeffer of the Goodyear India Rubber Glove; Congressman L. D. Apsley of the Apsley Rubber Company in Hudson, Mass., now the Firestone Footwear Company; Elisha D. Converse and his sons, Harry and Costello Converse, of the Boston Rubber Shoe Company, Malden, Mass.; the late George H. Hood, of the old Eagle Rubber Company, Jamaica


Boston Sept 17 1860
Sandine Stone Esqr
Bought of HENRY A. HALL & CO.
COMMISSION MERCHANTS,
INDIA RUBBER AND GUTTA PERCHA GOODS,
MILK, corner of CONGRESS STREET,
Paid H A Hall & Co

An Old Bill Head Used by a Rubber Goods Merchant of Boston in 1860

Plain, Mass., later of the American Rubber Company, Cambridge, now a U. S. Rubber unit, and the Boston Rubber Company, Franklin. His son, Frederic C. Hood, is president of the Hood Rubber Company today.

Tires have strangely drifted away from New England, although the early beginnings were made there. Today, the two largest units remaining are the Fisk Rubber Company in Chicopee Falls, Mass., and the Hood Rubber Company in Watertown. United States has a plant at Hartford, Conn., and a solid tire plant in Providence, R. I. In addition there are Norwalk Tire, Norwalk, Conn., the Armstrong and Yale companies in New Haven, Conn. Among those which have ceased to exist or to manufacture tires are the New England, of Holyoke, Mass.; Grow Tire, Canton, Mass.; Needham Tire, Needham, Mass.; the Paterson Tire of Lowell, Mass.; Converse Tire of Malden, Mass.; and Tyer Rubber, Andover, Mass. At that, this is only a small percentage of the mortality of small tire companies.

The growth of the two largest New England tire companies, Fisk and Hood, has been outstanding, however, as their beginnings were on a small scale. The records tell us that the Fisk Rubber Company is the outgrowth of a concern named the Spaudling Pepper Company of Chicopee Falls, Mass., which formerly made bicycle tires but fell into financial difficulties and on February 23, 1897, was assigned to Luther White. On December 1, 1898, a new corporation was formed, the Fisk Rubber Company, with $33,000 paid-in capital. Noyes W. Fisk was president, Harry G. Fisk, clerk and treasurer, A. N. Mayo a director, and C. E. Woodward, superintendent.

Hood Largest Footwear Factory

The Hood company began as a footwear company and today is the largest single factory producing footwear in the world, besides its substantial tire and mechanical business. The company was incorporated October 12, 1896 with capital of $50,000; Albert D. Bosson was president, F. C Hood, treasurer; and A. N. Hood, a director. Dispatches from the local press concerning the start are of interest:

"Reports begin to appear in regard to the establishment of a new rubber company by the Messrs. Hood at Watertown. The Watertown *Gazette* states that ground for the new factory had been broken by F. C. Hood, while the Franklin, Mass., *Sentinel* states that Charles L. Dean, formerly employed at a pattern maker, had been engaged for similar work at Watertown."

Operations at Hood's were started November, 1896, with the employment of 500 hands. The plant in which the company began covered 68,000 square feet and cost $200,000. Members of the early factory organization were Herbert Mason, superintendent, Charles L. Dean, J. W. Bradley, and Henry Weller. Just by way of contrast today the Hood Company has a $13,000,000 plant and employs 9,000 people.

New England has many small rubber companies in varied lines which are extremely prosperous. Take the Davidson Rubber Company of Charlestown, Mass., started in 1907 by Alexander Paul, manufacturers of druggist sundries; the Stedman Products Company of Braintree, Mass., makers of rubber flooring and reclaimed rubber; Taunton Rubber Company, Taunton, Mass., makers of heels and soles, tape, and molded goods; Tyer Rubber Company, Andover, Mass., druggist sundries and footwear (this company formerly made tires and dates back to 1868); Archer Rubber Company, Milford, Mass., proofers; Archer-Strauss Rubber Company, Framingham, Mass., rubberizers; F. S. Carr Rubber Company, also of Framingham, carriage cloth manufacturers; Reading Rubber Company, Reading, Mass., in the same line; and the Clifton Rubber Mfg. Company, Jamaica Plain, Mass., raincoats and specialties; Plymouth Rubber Company, Canton, Mass., heels and specialties. The Alfred Hale Rubber Company, Atlantic, Mass., specializes in crepe soles. DuPont has a rubberizing plant at Fairfield, Conn. The Davol Rubber Company in Providence, R. I., is an old well-established sundry concern as is the Seamless Rubber Company of New Haven, Conn.

The heel and sole branch of the rubber industry in New England is highly competitive and several small companies such as Killion of Dorchester, Mass., and Fellsway Rubber Company, Medford, Mass., have ceased to operate. But there are many successful rubber heel and sole manufacturers in New England, notably Panther Rubber Company of Chelsea and Stoughton, Mass.; Quabaug Rubber Company, North Brookfield, Mass.; Hanover Rubber Company, West Hanover, Mass.; Webster Heel Company, Sabbatus, Maine; Avon Sole Company, Brockton, Mass.; Gleasonite Products Company, Campello, Mass.

Holds Supremacy in Mechanical Goods

Leadership in mechanical rubber goods in New England is vested unquestionably in the Boston Woven Hose and Rubber Company of Cambridge, Mass., which does an annual business of close to $10,000,000 a year and shows a substantial profit year after year. George E. Hall, its president, is an outstanding rubber executive, and John M. Bierer, factory manager, has made many important contributions to rubber chemistry since he left his test tubes at the Massachusetts Institute of Technology not so many years ago. The Revere Rubber Company, Chelsea, Mass., is a large and successful unit of the United States Rubber Company in the mechanical goods field.

Reclaimed rubber manufacturing started in New England shortly after the Civil War when the late E. H. Clapp invented the mechanical separation process. Production started in a little shop at Roxbury Crossing near the old Boston Belting Company and was later moved to Hanover, Mass., where this company now operates as the E. H. Clapp Rubber Company. Other companies now operating in New England are the Achusnet Process Company, New Bedford, Mass., the Appleton Rubber Company, Franklin, Mass., and the Rubber Regenerating Company at Naugatuck, Conn., a United States Rubber Company unit. The Clapp Company has lately expanded into the extruded rubber field and molded goods for the automobile trade.

The Cambridge Rubber Company, Cambridge, Mass., is a footwear and raincoat concern which has come along fast since the war under the leadership of its president, Warren MacPherson, who has pioneered many new developments in footwear. The Converse Rubber Shoe Company, Malden, Mass., has been going through a reorganization and is now headed by Morton L. Paterson, a rubber footwear executive of long standing through his association with the Wales-Goodyear and Beacon Falls companies prior to taking over the managership of Converse's western branches in 1915. Most of this company's troubles have been due to a tire subsidiary which is now out of business.

Thus, while outwardly, it may seem that the trend is away from New England in certain rubber lines, in reality the industry is strengthening its hold there especially in footwear and mechanical lines. New England enjoys a plentiful supply of experienced rubber labor, good manufacturing conditions and nearness to raw materials and consuming markets which make it destined to become more and more of a factor in the country's production. True, most of the old faces have gone, but the younger generation is coming into the saddle to pick up the load and mark new milestones in the district which cradled the largest rubber industry of the world.

(Continued from page 490)

tract is cleared by payments through the clearing department of the Rubber Trade Association of New York, sending checks to the intermediate parties who have made a profit on the transaction, and billing those whose purchase and sale may have resulted in a loss. The last buyer before taking delivery, has the rubber sampled and weighed as before. The first seller cannot make delivery until the last buyer has paid in full.

If sale is through the Rubber Exchange of New York, and the first seller tenders the rubber, the procedure is to all practical purposes the same as above, the contract being cleared through the Rubber Exchange Clearing House.

It may, and frequently does, happen that rubber sold for future delivery is later bought by the first seller, completing a "ring." A fairly large per cent of the contracts recorded with the Rubber Trade Association of New York result in either rings or offsets.

Some rubber is consigned to dealers and brokers at New York by foreign dealers, but the amount is probably a small percentage of the total imports. In case of consignment, the rubber may be for sale at specified terms, or it may be necessary for consignee to secure bids and refer them to the consignor for determination as to acceptance.

*The cost of checking quantity and quality averages one large dealer who does his own sampling about 30c per case opened; with but 10 cases opened on a 10-ton lot of ribbed smoked sheet, the charge is a trifling one. To minimize expensive sampling of small lots, the work is usually done on several lots at once. The recognized weighmasters charge a somewhat higher rate.

Industry Has Highest Accident Rate

A TOTAL of 2,089 industrial concerns reported their accident statistics to the National Safety Council during 1927. These companies included the following eleven major industries: automotive, chemical, foods, metal, packers and tanners, paper, petroleum, power press, rubber, textile and woodworking. The outstanding fact revealed in connection with the compilation of these statistics was that the rubber industry had the highest rate both in frequency and severity of accidents. The statement that the rubber industry, as based on these figures, is the most hazardous industry in the United States, comes as a startling surprise to the industry as a whole. Every effort is now being made by the rubber section of the National Safety Council to coordinate safety work in the individual plants to the end that this condition within the industry can be ameliorated.

Fumonex

THE Binney & Smith Company has recently announced the development of another form of carbon black, to be known as Fumonex, which is now being manufactured in quantity production. This black occupies a position intermediate between Micronex and Velvetex and, according to its manufacturers, represents a higher yield carbon characterized by special qualities which make it of particular value in footwear, solid tires and mechanical goods. Its quality of workability in manufacturing operations, including ease in mixing and calendering, is of interest to the footwear manufacturer. These same qualities, together with ready tubing or extrusion, greater resilience and lower power loss, make it adaptable for use in solid tires and in the new automotive lines where rubber is used for its shock-absorbing and cushioning qualities.

The manufacturers recommend Fumonex to rubber manufacturers who are interested in lines which distinctly call for the use of such a material. However, they add a word of warning to the effect that while careful compounding tests indicate that Fumonex is fully equal to any carbon in its class, a high-yield carbon will not displace or equal the results obtained with a fine channel black such as Micronex.

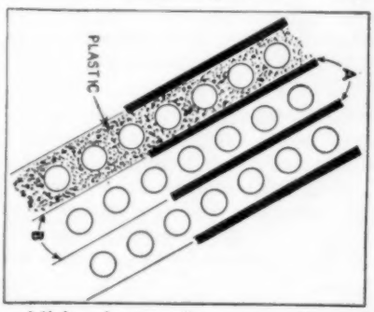
Schaphorst's CHATS *with the* ENGINEER

By W. F. SCHAPHORST, M.E.

Boiler Baffles and Boiler Baffling

INASMUCH as boilers and boiler baffles are so commonly used in the rubber industry, I believe it will be of interest to look back and compare old methods with present methods. When we do make such comparisons we are often startled to find that the total improvement is as great as it really is. Thus while talking with a boiler baffle expert not long ago I learned some interesting facts concerning the great advance that has been made within the past 14 years in the design of boiler baffle walls.

The first radical departure was brought out in 1914 by T. G. Turner who developed the baffle wall that is now famous all over the world. It was Mr. Turner's important development which first permitted angular baffling and his was the first to be arranged in that way. But for some unknown reason angular baffling was never protected by patent. Mr. Turner, now deceased, doubtless wished many times that he had patented the "angle" idea.



The employment of tiling in boiler baffling was a decided improvement over the former method of using brick baffles. Tiling made the baffles gas-tight, durable, and exceedingly flexible in design. The tile permitted practically any design of wall for any given furnace, and in addition it was the cause of considerable betterment in furnace efficiency and economy.

Thus by eliminating short circuits and compelling all of the flue gases to go through every pass, maximum heat is extracted and minimum stack temperature results. Being gas tight, regardless of the type of boiler or angle of baffle, the correct draft drop is always assured. The greater furnace volume and the better draft insure more perfect combustion. Hence soot and slag troubles are reduced to a considerable extent or entirely eliminated. So by compelling the boiler to absorb more heat out of every pound of fuel, the capacity of the boiler is, of course, increased. And owing to the fuel savings created by them, the baffles pay for themselves in a short time.

The illustration herewith shows three rows of boiler tubes equipped with tiling at the top, marked A, and with a sheet metal separator at the bottom, marked B, which is a recent development.

The tiling is flat and is made with corrugated sides to prevent gas leakage. The sheet metal separator is also corrugated, is of the same width as the tiling, but it is much thinner than the tiling.

The plastic material does not adhere so readily to the metal separator as to the tiling, consequently the metal produces joints that yield to expansion and contraction stresses more readily than the tiling, which is a decided advantage for the metal separator.

RUBBER CHEMISTRY and Technology

A Device for Measuring the Brittleness of Rubber and Gutta Percha Compounds*

By G. T. KOHMAN AND R. L. PEEK, JR.

Bell Telephone Research Laboratories, Inc.

A FAVORITE fancy of popular writers upon scientific subjects is a world in which the prevailing temperature range differs materially from that obtaining on the earth, and in which therefore substances would normally display properties very different from those that we associate with them. In the laboratory we are familiar with the property changes wrought by temperature, but it always remains a little difficult to think of mercury as a solid, for example, or of glass as a soft plastic substance. One material that undergoes extraordinary changes when the temperature is altered to a comparatively slight extent is rubber. The same is true of such related substances as gutta percha and balata.

It is generally known that these materials soften when heated: the change is most conspicuous in gutta percha, which is hard and firm at ordinary temperature but becomes soft and plastic above 140 degrees F. (60 degrees C.). It is not so generally known that these materials harden so much on cooling, that at very low temperatures they become as brittle as glass. Yet raw rubber, which is soft, flexible and elastic at ordinary temperatures, if held in liquid air and then suddenly withdrawn and struck with a hammer, will fly into fragments. The same effect may be observed at any temperature up to —76 degrees F. (—60 degrees C.). A similar effect is shown by gutta percha compounds cooled below —22°F. (—30°C.).

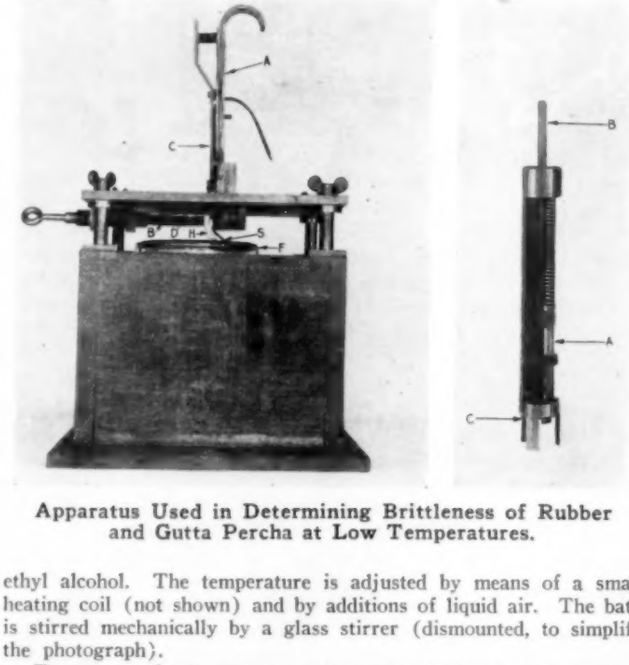
Degree of Brittleness is Important Factor

When compounds of these substances are employed for insulating purposes it is necessary that they should not be brittle at temperatures at which the insulation may be employed, if it is likely in use to come under any strain. The insulation of a submarine cable, for example, must not be brittle at sea-bottom temperature, which is as low as 0°C. (32°F.) over large areas. In the study of materials intended for such purposes it is necessary to have available a practical test by which to determine whether the material is brittle or not.

The development of such a test involves certain difficulties, due to the fact that brittleness can only be arbitrarily defined. A material is said to be brittle when it fractures under a moderate deformation quickly applied, but in any test the degree of deformation and the rate of application must be arbitrarily chosen. The more severe test will employ greater deformation more rapidly applied.

In a test developed by the authors the bending of a strip is used, and the highest temperature at which the strip will fracture under fixed conditions determined. The dependence of this temperature on the sample dimensions and on the rate and character of the deformation will be discussed below. The other factor in the design is that of temperature control and measurement. To provide for these, and at the same time to avoid having the mechanism subject to the varying resistance of the viscous bath liquid, the sample is held on a sliding vertical support, which normally holds the sample in the temperature bath. To test, this support is raised sharply and, as it brings the sample from the bath, automatically trips a hammer which bends the sample through a fixed angle (about 45 degrees).

A photograph of the apparatus is shown in Figure 1. S is the sample held against the movable support *A* by the clamp *C*. The hammer *H*, operated by the spring *B*, is shown in the tripped position, in which it has bent the sample as shown. When the hammer is locked by means of the catch *D*, the sample and support can be lowered into the Dewar flask *F*, in which is a temperature bath of



Apparatus Used in Determining Brittleness of Rubber and Gutta Percha at Low Temperatures.

ethyl alcohol. The temperature is adjusted by means of a small heating coil (not shown) and by additions of liquid air. The bath is stirred mechanically by a glass stirrer (dismounted, to simplify the photograph).

To measure the temperature a copper-constantan thermo-couple is employed, the e.m.f. generated due to the temperature difference between its junctions being read on a potntiometer. To avoid the inconvenience of having this e.m.f. change in sign when measuring temperatures above and below 32°F. (0°C.), the fixed junction is held in the steam over a bath of boiling water. All temperatures to be measured being well below 212°F. (100°C.), the e.m.f. developed is always of the same sign.

The sample in the form of a strip approximately 0.050 inch (1.3 mm) and 0.3 inch (7.6 mm) wide is inserted beneath the clamp *C* in such a way as to project beyond the end of the support *A* far enough to be struck by the toe of the hammer when the latter is tripped. The support is then lowered into the bath and held there for about 2 minutes to allow the sample to reach the bath temperature. The support *A* is then sharply raised, tripping

*Reprinted in part from *Instruments*, Vol. 1, No. 6, pp. 275-279, (June, 1928.)

the hammer, and the sample examined for signs of fracture. If the sample breaks the operation is repeated at a higher temperature, if it does not break, at a lower; and this is repeated until the highest temperature at which the sample will fracture has been located, as can generally be done, within 2°C. The determination first made is checked by repeating the procedure, starting with a temperature slightly higher than the brittle temperature found in the first determination, and changing the temperature in the opposite direction.

For purposes of comparison, typical results are given in the accompanying table.

BRITTLENESS TEMPERATURES OF RUBBER AND GUTTA PERCHA COMPOUNDS

	°C
Raw rubber:	
Pale crepe	—58
Smoked sheet	—57
Pure rubber hydrocarbon	—55
Pahang gutta percha	—28
Vulcanized rubber	—53
Balata	—44

Precise descriptions of the stocks listed are not included as the results given in the table are fairly typical. Compounded materials are generally brittle at higher temperatures, and for these the change is often not so sharp as for the materials listed.

As the test dimensions are arbitrary, the practical significance of the test would be somewhat uncertain if the brittle temperature were very sensitive to changes in these dimensions. Fortunately, however, this is not the case. Determinations were made on gutta percha samples using the hammer shown, which bends the sample through an angle of about 45 degrees, and with two other hammers of similar shape which bend the sample through angles of 15 and of nearly 90 degrees, respectively. The brittle temperatures determined with the three hammers were the same within 2°C., which is about the limit of reproducibility in any case. Tests were made on samples of gutta percha both 50 and 70 mils thick, and the results from the latter were from 5° to 10°C. higher than those from the former, indicating a comparatively slight difference in brittle temperature corresponding to the considerable increase in strain intensity involved in bending the thicker sample through the same angle. A similar test on samples of a rubber insulating compound indicated that its brittle temperature was the same for samples of these two thicknesses (50 and 70 mils).

High Spring Tension Maintained

When the spring tension used is light, the results are not so reproducible as when it is heavy. In the first case a stiff sample will be deformed more slowly than a soft one, and the test does not then afford a good comparison. Accordingly, the spring tension is maintained at a high value, so that the resistance of the sample is small compared with the frictional and inertia resistance of the hammer and the spring. The rate of movement of the hammer is thus very high, and nearly independent of the material tested. Under these conditions highly reproducible results are obtained. The spring actually used is under a tension of 12 pounds when held by the catch, and under a tension of 6 pounds when the hammer is resting against the sample holder. These approximate figures were obtained with a spring balance.

As from these data it follows that the brittle temperature is nearly independent of the test dimensions, this temperature may be safely taken as the minimum temperature for the safe use of the material. The deformation applied in the test being so severe, it is possible that the material might be safely used at this or at slightly lower temperatures, but the test gives positive evidence that if the temperature of use is above the brittle temperature there will be no danger of failure due to brittleness.

A modified form of the apparatus, shown in Figure 2, has been employed to determine brittle temperatures under high pressure. The sample, as a short strip, is held in a horizontal position below the lower plate, *C*, and is bent through an angle of about 60 degrees by the plunger *A*, which is shown in the released position. This apparatus is placed in a high-pressure bomb, in which pressures up to 20,000 pounds per square inch can be generated by screwing down on a piston. When the bomb has been brought to the required temperature and pressure, the hammer plunger is released by the action of a screw acting through the wall of the bomb on the smaller plunger, *B*, of which the upper part projects above the rest of the apparatus (Figure 2). This smaller plunger is beveled at its upper bearing, and in being forced down presses a small spring hinge to one side; this hinge is forced from a horizontal groove in the hammer plunger, and thus releases the latter.

Temperatures may be measured in the refrigerator in which the bomb is held for about 12 hours before each test. The slowness of the operation, the difficulties of temperature control, and the uncertain effect of the viscous resistance of the compressed cooling liquid on the plunger action have made it difficult to obtain precise results. It was found, however, that the brittle temperature of gutta percha and similar compounds thus determined, even at pressures up to 18,000 pounds per square inch, showed a difference of only 2° to 3° C. from the results obtained in the other apparatus at atmospheric pressures.

It is evident from the sharpness of the brittle temperature, and its independence of precise test dimensions, that it represents a temperature range in which the physical properties of the material change very abruptly. Such an abrupt transition frequently indicates a change of state quite similar to that of a solid into a liquid or of a liquid to a gas. Solids frequently exist in different states, changing from one to the other at a definite temperature, the physical properties of the two states being quite different. Tin, iron, and sulphur are familiar examples of substances which exhibit such allotropic transformations. The brittle temperature may possibly represent a similar transition for rubber.

Identifying Bad-Yielding Trees

DETAILS are now available regarding the reported discovery by Herbert Ashplant, research expert of the United Planters' Association of Southern India, of a method by which good and bad yielders among rubber trees can be distinguished in a very early stage of their growth by means of a measurement of the latex tube bore.

In his annual report for 1926-7 Mr. Ashplant announced that he had come to the conclusion that there was a significant relation between latex tube bore and the yield of the trees. Examination of a group of 239 trees chosen at random showed that the high yielders possessed latex tubes of large average diameter and the poor yielders tubes of small average diameter. He has since been occupied in perfecting methods of measuring the bore of latex tubes.

"Notwithstanding the disturbing effect of differences in the number of latex rings in the trees examined and their dissimilar girth," reports Mr. Ashplant, "the correlation coefficient of tube diameter with yield works out at the high figure of 0.76." He claims that it is possible satisfactorily to classify trees into good and bad yielders on the basis of the bore character alone, without reference to the number of rings, their girth or any other factor. Trees with small average latex tube bore remain low yielders even when endowed with more than the average number of rings.

Mr. Ashplant claims that charactristics of latex bore are hereditary. Also, anatomical examinations have shown that the character of the bore is constant throughout the growth of the tree. At the age of six months characteristic differences in bore are already manifest. It has not been possible yet to ascertain whether the distinction can be made at a still earlier age. As to the difficulties in the measurement of the bore, trees of a very high rank and of a very low rank can be recognized quickly.

The Research Institute of the Federated Malay States has issued a communique stating that there is nothing new in Mr. Ashplant's discovery, and that the experiment has already been fully worked out by research workers in the East Indies. It is also pointed out by the Research Institute that results do not support Mr. Ashplant's claim but definitely tend in the opposite direction. In a tapping test of buddings now being carried out by the Institute, the highest-yielding clone has latex vessels of much smaller bore than the lowest-yielding clone, and the Institute considers that this does not support the Ashplant theory. Clone is the term applied to all bud grafts taken from a particular parent tree.

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EDITORIAL COMMENT

Direct Use of Latex

EACH year brings additional fulfillment of the many prophecies concerning a great expansion in the direct use of rubber latex. It is only natural that those concerned with the rubber industry should want to eliminate some of the processes required in turning the rubber in latex into a solid sheet only to break it down again after it has been transported to the rubber goods factory. Not only does the rubber industry look askance at all this added cost and labor, but the direct use of the material as offered by nature becomes all the more desirable when it is known that quality also is lost in the coagulating and breaking down processes.

The latest product in which the manufacturer appears to have taken advantage in an important way of the direct use of rubber latex is the latex inner tube recently introduced by one of the largest American manufacturers. An examination of the product quickly makes one believe that its sponsors are right in expecting great things of it. Certainly it has apparently valuable qualities not present in tubes manufactured in the usual way. The announcements concerning it have been only fragmentary and the details of the process have not been made public. At the present moment the tube is ready in only two sizes and it is anticipated that a full line cannot be generally stocked throughout the country before the first of November.

What product will come next in the conversion to the direct use of latex is a matter of conjecture. It is rumored that tires themselves, or at least, tire treads, may very soon be produced directly from latex. When this stage is reached, if the rumor may be given credence, latex will, indeed, have reached a stage where the change will be impressive to everyone.

The change from coagulated rubber to liquid latex would be a striking one for the crude rubber trade. Instead of crepes and ambers and smoked sheets the trade would be in qualities of latex. Perhaps contracts on the Rubber Exchange of New York will be in Latex "A," "B" or "C."

The fabrication of rubber goods from liquid latex would seem to be a logical step in rubber technology. Certainly it would be a big step in the direction of simplifying manufacturing processes. The question of transportation has been responsible for the establishment of coagulated rubber, as is shown by the early direct use of latex by natives of the original rubber producing countries who fashioned footwear and other articles by coagulating their rubber in the form in which it was finally desired.

With the advance in tank car and tank ship transportation it has now become wholly feasible to ship liquid latex in bulk. In fact, the idea is far from new for liquid latex has been coming to the United States in tank steamers for several years. On account of the small demand and the consequent high cost per gallon, latex has not had a fair chance in competition with the standard grades of coagulated rubber. Every rubber product that embraces the direct use of latex will make for greater and cheaper importations, thus constantly expanding the field for the material.

A Record of the Wrong Sort

A RECENT report of the National Safety Council on the frequency and severity of accidents in important American industries reveals the unpleasant fact that the rubber manufacturing industry has made the poorest record in the past year and has stigmatized itself as the most hazardous of all the industries which furnish data to the Council. This unfavorable showing will come as a surprise to many people in the rubber industry who have been familiar with the genuine efforts being made in so many plants to reduce the accident rate. All industries are not comparable, of course, in the matter of industrial safety since the basic processes of all are not alike in simplicity or magnitude. It happens that the fabrication of rubber goods, even of the simpler sorts, calls for processes which offer plenty of opportunity for accidents. The safety campaigns have been in the direction of surrounding dangerous machines with adequate safeguards and inspiring workmen to observe the common sense laws of safety. The fight for safety has been vigorous, but unfortunately has been limited to too few factories. In view of the National Safety Council report, it certainly behooves every rubber company to make a greater effort than ever before to protect its workmen from harm.

The RUBBER AGE

Published on the 10th and 25th of each month.
The Only Twice-a-Month Rubber Publication.

THE PALMERTON PUBLISHING CO., INC.
Publication Office, 1-3 Peace St., New Brunswick, N. J.
Editorial Office, 250 West 57th St., New York City
Telephones: Columbus 6430, 6431, 6432

THE RUBBER AGE is published on the 10th and 25th of each month by The Palmerton Publishing Co., Inc., a New York corporation. P. L. Palmerton, President; Earl D. Osborn, Vice-President and Secretary; T. J. Lawson, Treasurer. Publication Office, 1-3 Peace St., New Brunswick, N. J. Subscription rates: Domestic, $2.00 a year; Canada, $2.50; foreign, $3.00; single copies, 20c. Advertising rates on application.

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NEWS of the INDUSTRY

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Building Operations
Personals
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SALES GAINS SHOWN IN GOODYEAR REPORT

Increase in First Six Months is More Than $7,500,000, Although Decline in Crude Rubber Values Cuts Into Amount of Net Profit.

DESPITE lower selling prices net sales of the Goodyear Tire and Rubber Company for the first half of 1928 amounted to $125,777,548 as against $118,244,231 in the first six months of 1927. Due to the drastic decline in crude rubber prices, however, the net income dropped to $3,893,362 as compared with $6,364,005 in the first half of last year.

"This profit showing," says P. W. Litchfield, president of the company, "is in the face of a difficult situation by reason of the decline in crude rubber values from 41 cents in January to 19 cents on June 30. Crude rubber inventories were written down to market as of June 30. The rubber content of finished products was carried at cost, it being estimated that finished inventory can all be liquidated during July or August without loss."

The net profit during the period was $3,074,200 after providing $4,690,966 for depreciation and after charging to special reserves $2,500,000 as cost of crude rubber in excess of the market price as of June 30 after taxes, interest, premium and discount and after deducting profits of subsidiary companies applicable to stock not held by the company. This net profit is equal to 28 cents a share on 829,611 shares of common stock, after a half year's dividend requirements on 805,123 shares of no par $7 cumulative first preferred stock, and on 6,697 shares of $100 par 7 per cent cumulative preferred stock on which accrued dividends amount to 25 per cent.

Current Assets Total $109,817,474

The balance sheet on June 30 shows current assets of $109,817,474, including $67,458,232 inventories and $9,608,072 call loans and cash, and current liabilities of $15,565,082. Reserves were $8,843,922 and surplus $25,866,636.

"While our share of the crude rubber reserve supply established by American rubber and automobile companies two years ago as a stabilization measure had not been delivered to us at June 30," President Litchfield further states, "and is not, therefore, reflected in the current position of that date, full provision has nevertheless been made in this midyear statement to write down to market our entire share as well as all other commitments for crude rubber.

"After applying $2,500,000 to write down of crude rubber, the balance of the special raw material and contingency reserves set up in previous years and not required for such purpose was $3,750,000 which the company has deemed it advisable to carry forward for future contingencies. The current position of the company at June 30 was strong, the ratio being 7 to 1, with no current indebtedness to banks."

It was also stated that all plants of the company, including new ones in England and Australia, were required to operate close to capacity to supply the demand.

GOODYEAR TIRE & RUBBER CO.
Consolidated Income Account

Net sales	$125,777,548
*Expenses and taxes	120,172,628
Net operating income	$ 5,604,920
Other income	577,176
Total	$ 6,182,096
Interest and charges	2,288,733
Total profits	$ 3,893,363
Subs. divs. and equity	819,163
Net profit	$ 3,074,200

*Including $2,500,000 excess cost of rubber reserves.

REFINANCING OF KELLY-SPRINGFIELD RUMORED

While officials of the Kelly-Springfield Tire Company refuse to discuss the matter, persistent rumors continue in financial circles to the effect that a consolidation of Kelly-Springfield with one of the other large rubber companies is being planned. Reports are also current that the management contemplates a new refinancing plan to reorganize the capital structure of the company and allow for the payment of arrears on the preferred stocks.

The Mason Tire & Rubber Company has resumed operations following a suspension of about six weeks. The company's plant at Kent, O., is now employing 150 men and will continue on the present production schedule until November 1. P. W. Eigner, president of the Kent National Bank, has been receiver for the company since June 26.

The Goodyear Rubber Company, Middletown, Conn., is reported to be entirely dismantling their plant and selling the equipment. Operations at the factory and at the Lambertville, N. J. plant of the same concern, ceased several weeks ago.

CENSUS OF MALAYAN RUBBER STOCKS TAKEN

Government Acts on Rubber Growers' Association's Suggestion for Careful Census of Present Stocks—Total Tonnage Reaches 58,327.

THE Rubber Growers' Association suggested to the Malayan Government that at the end of June and of each subsequent month a census should be taken and published of prepared rubber on estates over 100 acres, and in the hands of dealers in the restriction area, rubber in course of manufacture not to be included.

A cablegram has been received from the Association's local secretary, Kuala Lumpur, stating that the following are the stocks in the restriction area as of June 30:

On Estates Over 100 Acres:

	Tons	
F. M. S.	28,290	
Straits Settlements	4,995	
Johore	8,358	
Kedah	2,849	
Kelantan	299	
Trengganu (figures not available)		
		44,791

Dealer Stocks:

F. M. S.	10,371	
Straits Settlements	1,958	
Johore	945	
Kedah	140	
Kelantan	122	
		13,536
Grand total		58,327

It is important to note that these figures include the normal working stocks of dealers and on estates which are estimated to amount to about 25,000 tons.

The Malayan Government have been asked that the monthly census of such stocks should be taken until at least June, 1929, particularly in view of the circular issued by the Association recommending companies to spread over a period of six months, shipments of "unexportable" stocks on hand at October 31, 1928.

As regards Ceylon, action is being taken through the Ceylon Association in London, with a view to a similar census being taken.

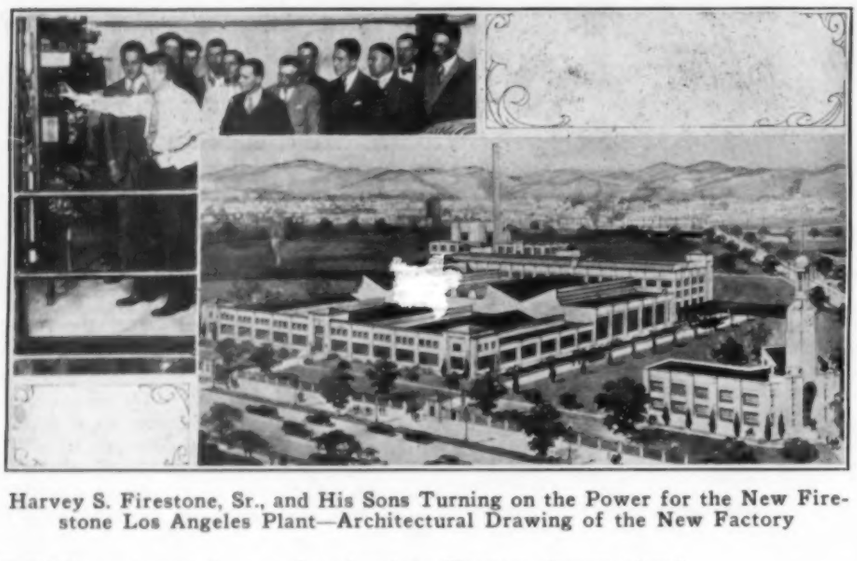
Miller Reports Loss

The Miller Rubber Company has announced a net loss of $3,121,860 for the first six months of the current year. The actual operating loss, however, was only $127,277 but the shrinkage in inventory was set at $2,388,399 and prevision for depreciation totaled $532,234.

The current assets of the company stand at $2.22 for every dollar in current liabilities.

The report to the directors indicated that the company was meeting with considerable success in sales. A new type of snug-fitting rubber shoe and a new type of balloon tire have been developed by the company and added to their line.

Firestone Family Opens the New Los Angeles Plant



Harvey S. Firestone, Sr., and His Sons Turning on the Power for the New Firestone Los Angeles Plant—Architectural Drawing of the New Factory

THE opening of the new Los Angeles plant of the Firestone Tire and Rubber Company on June 18 was rendered all the more dramatic by the presence of Mr. Harvey S. Firestone, Sr., and his three sons, Harvey, Jr., Russell and Leonard.

After a record breaking period of construction, the plant was ready for operation in less than a year after the first ground was broken.

The ceremonies, which were attended by the leading business men of Los Angeles, headed by the mayor and representatives of the Chamber of Commerce, included the fabrication of the first tires in the plant by Mr. Firestone personally, assisted by his sons.

Mr. Firestone touched a button, there was a hum of giant motors, and the new Firestone Pacific coast plant was ready to build its first tire. In fact it was history repeating itself, for almost exactly 26 years before, Mr. Firestone had hired his first co-worker in a tiny made-over machine shop in Akron, and Harvey, Jr.'s baby fingers had reached up and pulled the lever of a little boiler which was to comprise the first Firestone "power plant."

Leaving the power house, Mr. Firestone and his sons went directly to the mill room where they milled the first batch of rubber ready for the calenders. Mr. Firestone then directed and took part in the calendering operation with the expertness which demonstrated how closely he keeps in touch with factory affairs. Then he worked with his sons at the next operation, ply cutting, and "booking."

After that, came the actual building of the first tire. The casing was then ready for the heaters and Mr. Firestone placed the tire in the mold ready for curing.

The following day, at the Chamber of Commerce luncheon, the tire was inspected by Mr. George L. Eastman, president of the Chamber of Commerce.

The Pacific coast plant, built at a cost of nearly $7,000,000, is one of the most modern and efficient tire factories in the world. Under the straight line system of production a tube can be made and boxed in 35 minutes. A few years ago, the job took three days. The plant has a capacity of 5,000 tires and 6,500 tubes daily.

FRIENDLY SUIT ASKS RECEIVER FOR CONVERSE

A bill of complaint was recently filed in the federal equity court of Boston asking for the appointment of a receiver for the Converse Rubber Shoe Company, of Malden, Mass. The action was brought on behalf of Turner, Halsey Company, New York City, and merely asks for an accounting and an order restraining stockholders or creditors from maintaining suits in the interim.

Assets of the company are reported to be around $2,225,000 with liabilities at approximately the same figure. The respondent company answered the bill of complaint and signified its willingness to have a receiver appointed. In view of the reported good condition of the company, the present president, Morton L. Paterson, was named receiver and the company will be allowed to continue along the lines of its present operations. Mr. Paterson's bond was set at $50,000. The court action, it is to be noted, was in the federal equity court and was in no sense a bankruptcy proceeding. It was in the nature of a friendly action to speed up the reorganization and insure uninterrupted operation of the plant. At the present time the company is operating at fair capacity and is behind on its orders about three months.

The difficulties into which the Converse company got itself have apparently been the result of an attempt to invade the tire field with a line of automobile casings and tubes through subsidiary companies which could not be operated at a profit. This failure to make a success of the tire business led the company, some months ago, to cease the manufacture of tires and return to the manufacture of ruuber footwear exclusively.

The United States Rubber Company reduced prices on rubber-soled tennis shoes by about 10 per cent, effective August 1. It is expected that other manufacturers of this line of rubber footwear will follow.

Aetna Expansion Progressing

The new additions to Aetna Rubber Company plant at Ashtabula, O., are rapidly reaching completion. The three new buildings when completed will represent an investment of approximately $250,000. One of the buildings will be equipped as a machine shop while the other two will be devoted to the manufacture of the Aetna marbleized flooring and carpeting, a new product for which the company has acquired patent and manufacturing rights from the B. F. Goodrich Company.

Goodyear Holds Big Picnic

The annual picnic of the Goodyear Tire & Rubber Company, held at Meyers Lake, Canton, O., on July 21, was the largest affair of its kind ever organized by the company. Over 40,000 employees and their families and friends attended the outing. A parade of over 8,000 automobiles carrying the party and headed by the Goodyear blimp, the "Pilgrim," left Akron early in the day for the picnic grounds. The entertainment program included band concerts, athletic events and a fireworks display in the evening.

William E. Kottke

William E. Kottke, one of the compounding chemists of the B. F. Goodrich Company, at Akron, for the last 20 years, died at the age of 61, at his home in Akron on August 3. He leaves a widow and seven children. Mr. Kottke came to the United States from Germany and previous to his 20 years' residence in Akron, was for several years employed in Cuyahoga Falls, O.

MISS HILDAH M. HALL has been appointed the new director of girls' activities at the Goodyear Tire & Rubber Company, Akron, to succeed MISS CLARA BINGHAM, who will take over a new position in the Goodyear library. Miss Hall will have about 1,800 factory girls and 600 office girls to plan diversions for in directing the activities of Goodyear Hall.

R. P. DINSMORE'S five year old daughter, who has been recovering from a serious operation, was recently struck by an automobile but fortunately was not seriously injured.

PAUL ALTMAN, formerly of the Republic Rubber Company but more recently chief chemist at the Mason Tire & Rubber Company, has joined the Firestone forces. He is in the compounding department.

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RUBBER INSTITUTE IS SHAPING UP POLICIES

Tire Group Meeting Held in Akron With All Members Represented—General Andrews Presides at All-Day Session—Progress Reported.

A MEETING of the tire group of the Rubber Institute was held at the Portage Country Club, Akron, on July 27, at which practically every member was represented. The meeting was an all-day session and was very successful in its results, according to General Andrews, director general of the Institute.

While the activities of the Institute are not yet worked out to a point where any complete announcement can be made, it is understood that General Andrews is continuing his conferences in Washington with the Federal Trade Commission and officials of the Department of Justice and that each of the Institute's proposals so far submitted has had favorable recognition.

The meeting of the tire group was called by J. D. Tew, president of the B. F. Goodrich Company and head of the group. This group is the largest of the six divisions into which the members of the Institute have been classified. Of the forty-five manufacturing members, thirty-three fall into the tire class and it is estimated that this group represents 95 per cent of the tire volume in the industry.

General Andrews' Statement

In a short statement at the close of the meeting, General Andrews said:

"It is the hope of the Rubber Institute to bring the factor of distribution to as fine a basis as manufacturing has attained. That is to say, it is our hope that distribution may become similar to the practices in manufacturing, raw material coming in one door and the finished product going out the other, the intermediate processes being all in as straight a line as possible. This system, of course, is the most economical system possible.

"The Institute will never be interested in prices, allocations of territories or other practices which are fundamentally the problem of each manufacturer. We do hope, however, to establish trade practices which will benefit the industry as a whole, and which will be announced as soon as they take complete form.

"Since the inception of the Institute in June, I have heard the word 'if' used considerably by those interested in our work. The general talk has been: 'if the rubber manufacturers will agree,' 'if this can be done,' or 'if that can be done,' 'the Institute will be a success.' Personally, I have never considered the Institute in this light, and each succeeding meeting that I attend brings out the surprising fact that there are no 'ifs.' On the contrary, the members of the organization are the most sincere and frank group that I have ever known, and I can see real results coming into shape almost every day."

A short meeting was also held of original equipment manufacturers, nine of the ten companies having representatives in attendance.

FISK ERECTS PACIFIC COAST HEADQUARTERS

The Fisk Rubber Company is erecting a three-story building having 75,000 square feet of space in Los Angeles to serve as the southern Pacific coast headquarters for the company.

The building will have a storage capacity of 60,000 tires and will be used both as a distributing center and general office headquarters for the organization in that territory. The company has similar distributing units in San Francisco and Portland, Ore.

Equipment Firms Combine

Manning, Maxwell & Moore, Inc., has announced the purchase of the entire manufacturing and selling business of the American Schaeffer & Budenberg Corporation, including good-will, trade names, trade marks, patents, etc.

Under the new combination, the American Schaeffer & Budenberg Corporation business will be conducted by the Consolidated Ashcroft Hancock Company, Inc., an operating company owned exclusively by Manning, Maxwell & Moore, Inc., which has handled the manufacture and sales of its steam specialties business for many years.

AKRON UNIVERSITY TO HAVE RUBBER LABORATORY

Akron University will have the most complete rubber research laboratory in the world if the plans as submitted by Dr. H. E. Simmons, head of the department of chemistry, are finally approved.

The policy to be adopted by the University in connection with the research laboratory will be primarily one of service to the industry around Akron and will be maintained in close cooperation with the industries in the city. Its facilities will be made available to smaller rubber companies for the use of their own chemists in conducting tests and experiments and at least five fellowships in rubber research will be established for intensive work by graduate chemists. Two such fellowships are already established through the Goodyear Tire & Rubber Company and the Firestone Tire & Rubber Company.

It is estimated that the building and equipment of the new rubber research laboratory when completed will represent an investment of $300,000.

It has been further suggested that a rubber symposium, perhaps called "The Akron University Rubber Institute," be held annually at which the leading rubber authorities of America and Europe will discuss specific problems of the industry and to which rubber men will be invited.

Goodrich Buys Plane for Interplant Travel

WITH the recent purchase by the B. F. Goodrich Company of a new Fairchild airplane for the use of busy executives of the company, a new chapter in speedy interplant transportation has been begun. The plane is a four-passenger cabin-cruiser type and carries a 225 horsepower Wright Whirlwind motor. This motor is a duplicate of the one used by Colonel Lindbergh on his trans-Atlantic flight.

The plane is intended for use by Goodrich officials in transacting urgent business between the various branches and the home office at Akron. Closer contact between the Akron plant and the Goodrich factory at Kitchener, Ontario, is also assured.

The plane has been used extensively since its acquisition. C. B. Tomkinson, Goodrich comptroller, flew to Toronto, Canada, for an advertising conference and then to the Kitchener plant for a production meeting. Immediately upon his return to Akron, the plane, carrying Henry Wacker, manager of the aeronautical sales division for Goodrich, left for Fargo, North Dakota, to meet the returning National Air Tour and escort the group of planes back to Detroit.

C. S. Caldwell, an aviator of international reputation who gained additional fame in his tireless search for Nungesser and Coli, has been piloting the plane since its purchase by the Goodrich Company.

The accompanying picture of the plane was taken immediately after landing at the Akron Airport at the end of the first official flight. In the inset are J. D. Tew, president of the B. F. Goodrich Company, T. A. Aspell, assistant manager of manufacturers sales and Henry Wacker, manager of the aeronautical sales division.

UNITED AMERICAN PLANTATIONS FORMED

New Concern Incorporated to Acquire Plantations in Middle East—Headed By Edgar B. Davis—No Details Yet Made Public—D. M. Figart a Director.

ANOTHER project which will bring more American capital into the rubber growing industry is seen in the recent organization of the United American Plantations, Inc., headed by Edgar B. Davis, formerly a director of the United States Rubber Company and a prominent figure in rubber circles. No details of the plans of the company have been made public but it is understood that the company proposes the purchase and amalgamation of certain existing plantations in some part of the Middle East. The attorneys of the corporation state that a formal announcement will be made at a later date when the plans of the new organization have proceeded far enough to justify it.

Others associated with Mr. Davis in the venture are Walter B. Mahoney, a director of the Goodyear Tire & Rubber Company and editor of the *North American Review*, and David M. Figart, a well-known statistician in the rubber trade and formerly head of one of the commissions of the Department of Commerce which made a world's survey of crude rubber production in 1924. It is understood that Mr. Davis in company with Mr. Mahoney are now en route to the Far East. Mr. Figart is in Europe.

Mr. Davis has long been associated with rubber interests and was in charge of the laying out of the United States Rubber Company's plantation in Sumatra. He is also known to share the views of Harvey S. Firestone and others that America should develop her own sources of crude rubber.

At the same time of the incorporation of the United American Plantations, Inc., papers were also filed by Mr. Davis and his associates for the incorporation of the United Rubber Research Corporation for the purpose of "research work in connection with the rubber industry." It is understood that this will simply be an allied concern to carry on research and laboratory work for the operating company.

Capitalization of both companies was stated to be in the nominal sum of $20,000 each, and entirely subscribed by the three directors.

Receivers for Lambertville

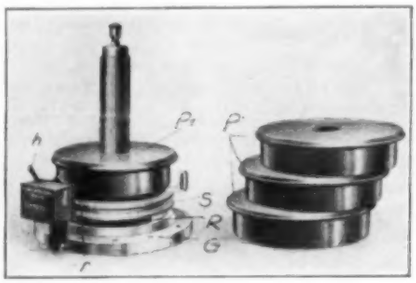
Vice Chancellor Bentley in the court of chancery, Trenton, N. J., has appointed William E. Crowley, of Lambertville, and Samuel Milberg, an attorney, of Jersey City, as receivers of the Lambertville, N. J., branch of the Goodyear Rubber Company of Middletown, Conn. Mr. Milberg has been serving as a temporary receiver but a permanent receivership was effected to safeguard the interests of the company from suit that was threatened by a former agent of the company. Mr. Crowley was superintendent of the factory for many years. It is now rumored that Philadelphia rubber manufacturers contemplate taking over the Lambertville plant.

CATALPO!

German Detrition Tester

AN apparatus for testing the detrition or wearing capacity of rubber is being offered by Louis Schopper, of Leipzig, Germany, through H. Z. Schniewind, 72 Duane street, New York City, exclusive agents for the Schopper line of testing machinery in the United States and Canada.

The apparatus, as shown in the accompanying illustration, is of simple construction. In the cast iron plate *G* which is



screwed to the testing table, there is a recessed V-shaped groove *R*, into which the rubber ball of about 35 millimeters diameter to be tested is placed. The rope pulley *S* which rests directly on the ball and which is placed in rotation by means of a cord from a small motor, runs around a stationery vertically arranged arbor.

The loading of the ball takes place by the placing of the load weights *P* on the pulley *S*, up to a total of 100 kilos. The ball under the load in the groove *R* is constantly rotated and under this strain becomes brittle, the brittleness usually starting from the inside toward the outside. In addition to this brittleness, the ball is also subjected on the surface to a greater or lesser wear. This wear can be expressed in per cent by weighing the ball before and after the test. The apparatus is provided with a counter, from which the rotations of the pulley *S* can be read. By means of the lever *h*, the counter can be set at zero, with the exception of the digits, which are set by means of button *r*.

Hose Specifications Adopted

The sectional committee of the American Engineering Standards Committee, representing 12 important interests, has adopted by a substantial vote the proposed specifications for cotton rubber-lined fire hose. This step practically completes the work of the sectional committee which was organized in November, 1926, and sponsored by the American Engineering Standards Committee's fire protection group. The specifications are now before the sponsors for approval.

AUTO PARTS BUSINESS HAS RECORD HALF YEAR

Having reached record breaking heights in March, and continuing at virtually that level in April and May, manufacturers of automobile parts and accessories felt only a mild seasonal recession in June business, while their volume for the first six months of the year was the greatest in their history, according to the Motor and Accessory Manufacturers' Association, composed of several hundred representative automotive manufacturers.

Aggregate June business of a large group of reporting members was 190 per cent of January, 1925, the base index used by the Association, as compared with 201 per cent in May, 195 per cent in April and 167 per cent in June a year ago.

Sales volume is holding up well during the summer months and there is every indication that a high level of activity will be maintained by the industry for the remainder of the year.

Rubber in Bond to Akron

Since the creation of Akron as a customs port of entry early in 1927 there has been a noticeable increase in the amount of crude rubber shipped direct to Ohio in bond, the Department of Commerce has pointed out. A total of 2,017 tons arrived in Akron in this way during 1927. The rubber is usually imported direct by the manufacturer. The advantage of entering the rubber through customs at Akron is the saving of time involved in the handling at the seaboard and transhipment by rail. Rubber moves more rapidly when entered in bond for some inland point as the shipping companies are able to issue bills of lading immediately.

Northern Reports Profits

The Northern Rubber Company, Akron, O., at the recent meeting of the board of directors reported a substantial profit for the first half of the current year in spite of losses occasioned by the drop in crude rubber prices and reductions in prices of tires. The directors anticipate that the earnings for the entire year will be from two to three times as great as the preferred dividend requirements. Sales during the first half of the present year were double those of the corresponding period in 1927.

The state of New Jersey has awarded to the Murray Rubber Company, Trenton, N. J., the contract for furnishing pneumatic tires for the fleet of state-owned cars for the current fiscal year. The award was made on a bid of $33,347.96.

A portrait of the late Joseph Stokes, prominent Trenton, N. J., rubber manufacturer, has been presented to the new Masonic Temple at Trenton by his two sons, William J. B. Stokes, of the Thermoid Rubber Company, and Charles E. Stokes, of the Home Rubber Company. The two sons recently contributed $24,000 for the Joseph Stokes Memorial Library in the Masonic Temple, where the picture will hang.

ORMSBY-GORE PRAISES DUTCH INDIA METHODS

In a lecture before the Royal Colonial Institute, London, made shortly after his recent return from the Middle East, Mr. Ormsby-Gore, British Colonial Under-Secretary, stated that before his tour not a single person in the Colonial Office had ever seen Malaya, and he was satisfied from his experience that it was impossible for the Colonial Office to do its part in the effective work for the progress of the Empire by staying and doing the job in London.

Speaking of native plantation practices in the Dutch East Indies, Mr. Ormsby-Gore stated: "The pressure of population on land in Java accounts for a certain difference in outlook and is one of the main reasons why the application of modern scientific discoveries to the problems of tropical agriculture have been pushed farther in Java than in the neighboring countries. British Malaya is a very new country and such developments as have taken place are largely the result of the efforts of the last 30 years.

"It is in bringing the new knowledge not merely to the plantations, but to the villages and the ordinary peasant, that the success of the Dutch is so outstanding. Nothing appealed to me more than the high quality of the peasant cultivation, not merely on the irrigated areas, but even up the mountain sides. In the ordinary village gardens one sees being practiced the use of green manures, the rotation of crops and all the latest devices for preventing soil deterioration and soil erosion.

"The success of the rubber industry in Malaya is due not so much to any efforts in the direction of scientific agriculture, but rather to the fact that rubber has been planted on new virgin soil freshly cut out of jungle in climatic conditions ideally suited to the successful cultivation of the tree. But the future of plantation rubber must, in my opinion, depend upon the superior scientific treatment of the crop on the European plantations. The European estates have many charges to bear, and in the matter of planting selected trees with their high yielding capacity, Java, Sumatra and Ceylon are already ahead of Malaya."

GENERAL MOTORS PROFITS ESTABLISH NEW RECORD

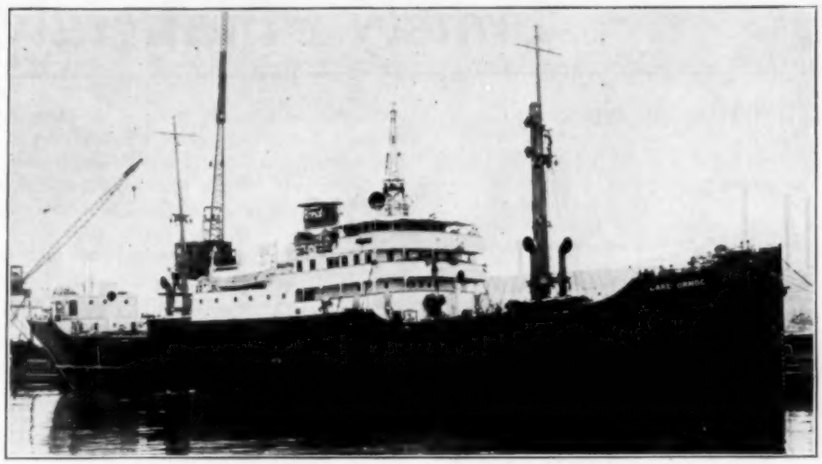
The net earnings of General Motors Corporation for the first six months of the current year totaled $161,267,974 and set a record in the history of the organization. The increase in sales over the same period last year was 26.4 per cent.

These earnings compare with $129,250,207 reported for the first six months of last year, the increase being $32,017,767 or 24.8 per cent. The amount available for common stock, after deduction of $4,702,000 for preferred and debenture stock dividends was $156,565,974. This was equal to $9 a share on the 17,400,000 shares of common stock outstanding at the end of the half-year period, comparing with $7.18 a share for the first half of 1927, calculated on a comparable basis.

"For the six months ended June 30 retail sales by the General Motors Corporation dealers to users were 1,062,733 cars, compared with 840,481 cars in the corresponding period of 1927, an increase of 26.4 per cent," said Alfred P. Sloan, Jr., president of the corporation. "General Motors sales to dealers for the first six months totaled 1,083,316 cars, compared with 883,447 cars in the corresponding period of 1927, an increase of 22.6 per cent."

Mr. Sloan disclosed that the corporation on June 30 had on hand cash, United States Government and other marketable securities valued at $264,383,668, which constitutes a new high record for cash and cash items.

Another Ford Ship Leaves for Brazil



The S.S. *Lake Ormoc* Starts From Detroit on Her Long Voyage Into the Heart of the Amazon Region of Brazil

The S. S. *Lake Ormoc* of the Ford Motor Company's fleet, recently left Detroit to follow the S. S. *Lake Farge*, now en route to Santarem, Brazil, the base for the activities of the new Ford plantation project on the Tapajoz River in the heart of the Amazon region. The ship carried an additional load of supplies, machinery and equipment for the first operations on the plantation development. Both ships will stop in New York en route to complete their cargoes. The S. S. *Lake Ormoc* is fitted as a hospital ship as well as a supply ship. In addition it has a well equipped laboratory and a well stocked library.

It is reported that progress has already been made in the development of the plantation concession and the nucleus of the permanent staff is already on the ground. Native labor, which has heretofore been judged the chief handicap in the proposition, has been flocking into the area, stimulated no doubt by the "jungle telegraph" that Mr. Ford's salaries are more attractive than the hand-to-mouth compensation which they have been receiving. But it is still a question whether if Mr. Ford drained all of the available rubber gatherers of the region he would have sufficient labor for his gigantic plans.

Rubber Patents Corporation

The formation of the Rubber Patents Corporation, of Grand Rapids, Mich., was recently announced, with R. W. Hook as president, David A. Warner, vice-president and Heber W. Curtis, secretary and treasurer. The company, which recently purchased patents and manufacturing rights for a line of rubber products including surf-balls and other sport specialties in various sizes, has entered into a contract with the Corduroy Tire Company, also of Grand Rapids, by which the latter concern will manufacture the line.

The company is capitalized at $100,000. Sales offices have already been opened in Los Angeles and branches will be maintained in New York and Chicago. Distribution will be through the regular sporting goods trade.

Employment at High Level

A high level in employment in the tire and automobile industries is being maintained, according to the latest report of the Department of Labor. There was an increase of 20 per cent in the number of employees and 29 per cent in amount of pay roll in automobile factories during June over the same month last year. In the tire plants there was a decline of 1 per cent in personnel and a half of 1 per cent in payrolls in comparison with June last year.

Of 210 automobile plants reporting, a total of 407,110 workers were employed in June as compared to 407,148 in May, while the payroll for May was $13,927,595 as against $13,205,564 in June.

Fifty-two tire factories reported 58,070 workers employed in June with pay roll of $1,838,672 as against 56,572 and a pay roll of $1,747,313 in May.

The Firestone Tire & Rubber Company is understood to have recently purchased a building site in Miami, Fla., and is expected to build a distributing plant on the property.

The Meixsell Manufacturing Company of 480 Hudson street, Jersey City, N. J., has been incorporated in New Jersey with 1,000 shares of no par value stock to manufacture rubber goods and fabrics. Charles W. Symanski, F. I. Frank and R. Ilpal, all of Jersey City, are the incorporators.

Timely Financial News

GOODRICH SHOWS LOSS FOR FIRST SIX MONTHS

Loss is Occasioned By Drastic Drop in Crude Rubber Prices—Net Sales Are Greater Than Same Period Last Year—Unit Sales Also Increase.

THE regular quarterly meeting of the directors of the B. F. Goodrich Company was held July 25 at which it was reported that the operations of the company during the first six months of 1928 resulted in a loss of $1,574,889. This was caused by the drastic decline in the price of crude rubber brought about mainly through the decision to remove the British rubber export restrictions. All raw materials including crude rubber on hand and under commitment have been taken into the accounts at the lower of cost or market.

Unit Sales Increase

Net sales of the company for the first six months of 1928 amounted to $70,624,878, as compared with $69,274,347 for the same period in 1927. The increase in volume of sales was relatively greater than the dollar sales would indicate as prices were substantially lower during the first six months of 1928 than during the corresponding period of 1927. The reserve of $1,000,000 for contingencies set aside December 31, 1927, remains intact.

Vacancies in the executive committee were filled by the appointment of V. I. Montenyohl, treasurer, and T. B. Tomkinson, comptroller.

The regular dividend of $1.75 per share was declared on the preferred stock payable October 1 to stockholders of record September 10, 1928. A dividend of $1.00 per share was declared on the common stock without par value payable on September 1 to stockholders of record August 10, 1928.

HENDERSON RUBBER GETS NEW REFINANCING PLAN

A refinancing plan which it is hoped will permit the Henderson Tire & Rubber Co., Columbus, O., to reopen at capacity production was outlined to the stockholders and received their approval at a recent meeting of the company. A number of business men of Columbus, including representatives of most of the local industrial plants and the chamber of commerce, were invited to attend the meeting.

The plan provides for the issuance of 20,000 shares of Class A stock of no par value at $7.50 per share. Until $75,000 worth of this stock is subscribed, all moneys received from the sale of the stock will be held in trust by a bank to be designated by the commission.

The refinancing plan, according to company officials, will permit doubling of present facilities and reopening some time in August with employment of more than 600 men.

CATALPO!

RUBBER COMPANY STOCKS STEADY IN QUIET MARKET

There was little of interest in the trading in the stock issues of the various rubber manufacturing companies during the past fortnight on the various exchanges. Price levels have remained fairly firm and the volume of actual transactions have been light.

India Tire & Rubber was the most active stock and at one time climbed to 39⅞. Rumors still connect this concern with various proposed mergers and refinancing plans but nothing official has come from any of authorized spokesmen for the company.

Seiberling and Fisk have shown a slight weakness, the latter going to a new low of 10⅜ but each has rebounded within the last few days. Mohawk has also lost much of the gain made when it touched 165 and has receded to 130 in spite of the fact that it was one of the few companies to show a substantial net profit for the first six months of the current year.

Intercontinental continued to go off but this was expected in view of the present unfavorable position of guayule in comparison to crude rubber.

In general the entire list shows a slight off tone probably aggravated by the knowledge that the majority of the manufacturing companies are going to show a loss for the first six months' operation for the year.

Late Stock Prices

	Last Price		—1928—	
	Aug. 4	July 20	High	Low
Ajax	8⅛	8¾	14⅜	7½
Firestone	170	175	232	170
do. 6% pfd.	109½	110	112	109
do. 7% pfd.	106	109¼	111½	108
Fisk	11¼	11¼	17¾	10⅜
do. 1st pfd.	70	66½	91½	66½
General	167	169	190	165
do. pfd.	96	95	111	98
Goodrich	77⅜	77¾	99⅜	68½
do. pfd.	111	112	115⅜	109½
Goodyear Com.	53¼	47⅞	72½	45⅛
do. pr. pfd.	96½	93½	99½	92½
do. pfd.	—	102	120	100
Hood	25	26½	43	25
India	37¾	35⅝	45	16
Intercontinental	10	10⅜	21¾	8⅛
Kelly Springfield	19⅜	19	27⅜	15
do. 1st pfd.	—	70	80	58
do. 8% pfd.	68	—	84	55¼
Lee	20	19	24½	17¼
Miller	19	19½	27	18⅞
do. pfd.	77	81	97½	70
Mohawk	130	143	165	29¾
do. pfd.	—	87	87	55
Seiberling	42½	41	49½	35
do. pfd.	102¼	105	107½	102
U. S. Rubber	32	30⅛	63¼	27
do. pfd.	62	60⅛	109⅜	55
U. S. Rubber Reclaiming Com.	—	—	16½	11½

SHOWS PROFIT DESPITE THE "UNEARNED" LOSS

General Rubber Earnings at 2 Per Cent After Absorbing Large Deficit in Inventory Value, Caused By Decline in Crude Rubber—Unit Sales Higher.

THE General Tire & Rubber Company has announced that in spite of the fact that they have written off and absorbed a considerable inventory loss, resulting from the collapse of the crude rubber market and lower tire prices, sales for the first six months of the year were highly satisfactory and permitted the company to show a profit of 2 per cent.

The fact that the General Company showed a profit after wiping out the entire inventory loss in a short six months' period shows the excellent financial position in which the company finds itself. The action in absorbing the "unearned" loss in the first half year's statement is in line with the action of other large manufacturing companies, but which in the instance of Goodrich and United States Rubber caused these companies to show deficits.

No Detailed Statement Published

No definite figures aside from the above general statement has been forthcoming as yet from the company's officials. According to officers of the concern, however, the reported sales for the first six months show that General got more than a satisfactory share of the country's tire business because many people, finding the price difference between all tires so slight, bought the General tire at a slightly higher price range. The result was that the company made up in new business the loss it shared with other companies through the slump in crude rubber prices.

MOHAWK RUBBER EARNS PROFIT OF 10 PER CENT

The Mohawk Rubber Company has returned a profit for the six months period ending June 30 of $300,000, according to an announcement recently made by S. S. Miller, president of the company. This is equivalent to a net profit of 10 per cent after deducting all charges.

Net sales for the period amounted to $3,098,447, which represented an increase of 22 per cent over the same period of 1927.

"The anticipated earnings for the last half of the year are approximately double the first half," President Miller said in his statement. "This is accounted for by the fact that while our rubber cost was low in the first half, it will be on a market basis for the last half.

"Considering the general business outlook, we anticipate a much better year than 1927, when we showed earnings of $23.50 per share on our common stock."

Names in the News

A. F. OSTERLOH, formerly secretary of the Goodyear Tire & Rubber Company and more recently, vice-president and general manager of the California division of the company, with headquarters at Los Angeles, has resigned after twenty-four years of service to join Erwin, Wasey & Company, an advertising agency in Chicago, which he will serve in an executive capacity.

HARVEY S. FIRESTONE, SR., president of the Firestone Tire & Rubber Company, is planning the development of a further addition of 800 acres of the Firestone Park Land Company's holdings. The new tract is in South Akron overlooking the Tuscarawas Valley. The size of the undertaking has stirred up considerable interest in the southern section of Akron and a boom in the immediate vicinity.

A. BRAND CALDER, United States trade commissioner at Shanghai, China, visited Akron on August 6 and held a series of conferences with export representatives of various of the Akron rubber companies on trade conditions in China and ways to increase business between Akron and the Far East.

FRANCIS SEIBERLING is chairman of the Akron chamber of commerce industrial committee which is promoting a $1,000,000 industrial foundation to bring new industries to the city.

GEORGE N. WALKER, advertising manager of the tire division of the United States Rubber Company, New York City, sailed for Europe recently on the S.S. *Adriatic*, for a combined business and pleasure trip. While he will see a number of "U. S." distributors, it is understood that the trip is a part of a well earned vacation.

J. C. NYBORG, president of the Reliable Airless Tire Corporation, Minneapolis, Minn., has announced that the company has begun the manufacture of its new line of steel inner tubes. The tube is made of a special type of steel and is hollow throughout. It is said that it will cost no more than the ordinary rubber tube. Mr. Nyborg is also the inventor of the new tube.

A. CUSHING has been appointed a director and vice-president of the Alfred Hale Rubber Company, Atlantic, Mass., manufacturers of "Rajah" soles and "Halesoles."

R. E. HUTCHINSON of the chemical staff of the Firestone Tire & Rubber Co., has been transferred from the Akron plant to the new Los Angeles factory.

ELDEN H. RUCH has been transferred from Akron to take charge of the laboratory of the new plant of the India Tyre & Rubber Co. (Great Britain), Ltd., at Inchinnan, Scotland.

C. EDWARD MURRAY, JR., recently returned from a business trip through the middle west. While in Akron, he attended the board of directors meeting of The Rubber Institute, Inc.

WILLIAM A. HOWELL, superintendent of the Whitehead Brothers Rubber Company, was a member of the citizens' committee of the city of Trenton, N. J., at the celebration on the Fourth of July.

T. B. TOMKINSON, comptroller of the B. F. Goodrich Company, was the first Goodrich executive to use the new airplane of the company, when on July 19 he took off from Stow Field, Akron, for Toronto, Canada. After luncheon with J. W. JORDAN, vice-president and general manager of the Canadian Goodrich plant, Mr. Tomkinson continued his flight to Kitchener, Ontario, returning to Akron the following day.

G. H. CALLEN, of the export department of the India Tire & Rubber Co., Akron, sailed from New York July 18 on the S. S. *Sixoala* for an extensive business trip to Central and South America in the interests of his company. His trip is expected to cover a period of four to five months.

EDWARD BARRY, resident engineer of the new Pacific coast plant of the B. F. Goodrich Company, has returned from a five-weeks' tour through the northwestern part of the United States. W. R. HUCKS, of the Akron plant of the company, has replaced ARTHUR KELLY as chief compounder and Mr. Kelly returns to the chemical engineering department at Akron.

B. J. FOX, manager of sundries sales of the Goodyear Tire & Rubber Co., is conducting the tire repair school at the Los Angeles plant of the company.

PAUL E. WESTON, a recent graduate of the University of Wisconsin, has accepted a position with the Roessler & Hasslacher Chemical Co.

W. A. WILLIAMS, works manager of the North British Rubber Co., Ltd., is visiting South Africa on business and for his health.

C. D. WALLBANK has been appointed manager of manufacturers' sales for the Goodyear Tyre & Rubber Co. (Great Britain, 1927), Ltd.

SIR GEORGE SUTTON, who is chairman of W. T. Henley's Telegraph Works Company, and Henley's Tire & Rubber Co., Ltd., London, has just been elected chairman of the Royal Society of Arts, of which he has been a member for forty years. Sir George took his first certificate for commercial knowledge under a Royal Society of Arts examination over 50 years ago.

P. W. LITCHFIELD, president of the Goodyear Tire & Rubber Co., has recently returned from an extended business trip to Europe and reported that the company's British plant at Wolverhampton was now turning out 2,400 tires per day. While abroad he also visited the Zeppelin plant at Friederichshafen, Germany.

R. DENT MCDOWELL, president of the India Machine and Rubber Mold Company of Akron, is also president of the new McDowell Oil & Gas, Inc., which expects to open its first gasoline station in Akron early in August. It will be the handsomest station in the Akron district and is modeled after the Atlantic Refining Company's de luxe station at Pittsburgh.

C. H. KELLOW, formerly sales manager of the Textile Rubber Company, Akron, has been appointed vice-president and general manager. E. S. TEED, former president of the company, recently resigned to accept a position with the Firestone Tire & Rubber Company.

E. G. WILMER, former president of the Goodyear Tire & Rubber Co., and recently the president of Dodge Brothers, has tendered his resignation in view of the acquisition of the Dodge interests by the Chrysler Corporation.

HARRY CONROY, one of the chemists of the General Tire & Rubber Company, Akron, O., is driving to Boston for his vacation.

W. O. RUTHERFORD, president of the Pennsylvania Rubber Company and formerly vice-president of the B. F. Goodrich Company, has sold his large estate in Akron and will move with his family to Jeannette, Pa., where he will be near his present connection.

R. R. OLIN, of the R. R. Olin Laboratories, Akron, O., delivered an address at the recent sales convention of the Imperial Color Works, Glen Falls, N. Y., on the subject of the "Methods of Rubber Manufacture."

HENRY WACKER, manager of the aeronautical sales division of the B. F. Goodrich Company, recently made a ten-day trip through the west in the new Goodrich plane. "CY" CALDWELL, who was one of the searchers for Nungesser and Coli, was the pilot.

P. S. SHOAFF, formerly chemical engineer at the Goodyear Tire & Rubber Company, Akron, has been named division superintendent of the reclaim division.

D. BAKER, formerly assistant chief chemist at the Mason Tire & Rubber Company, is now with the Rubber Service laboratories at Akron.

Current Crude Rubber Items

ACCUMULATIONS BEGIN ON MALAYAN ESTATES

Stocks on Hand as of June 30 Totaled 58,327 Tons—Unshipped Stocks as of November 1 Are Estimated to Total 75,000 Tons.

A CENSUS of accumulated rubber stocks in British Malaya, taken under the direction of the British restriction authorities within the last two weeks, has revealed the fact that stocks held on the plantations on June 30 amounted to 44,791 tons, while stocks in eastern dealers' hands totaled 13,536 tons, indicating that the accumulation of crude rubber in anticipation of the end of restriction on November 1 had already commenced.

Expected to Reach 75,000 Tons

Analyzing this with a view of determining what the excess accumulation will be on November 1, when restriction will have been abolished, F. R. Henderson, president of the Rubber Exchange of New York, estimates that the unshipped stock at that time will be approximately 75,000 tons. This, of course, is making allowance for the usual quantity of rubber on the plantations which is in the course of preparation for shipment, and also the normal stock carried by the dealers for similar reasons. The figure is based on standard production, and, if anything, is slightly on the high side, Mr. Henderson feels.

No appreciable amount of this surplus can reach the consuming markets this year, so that there is really no effect on the analysis of the statistical position of rubber for this year.

"There is no gainsaying," said Mr. Henderson, "that such an amount of rubber is having an effect on the forward positions, and there is an increasing tendency to buy this year's deliveries and sell next year's against it. This accounts for discounts prevalent on the 1929 sales. Indications still point to an increase in consumption during July and my company continues to favor accumulation for deliveries the balance of this year."

W. S. Hammesfahr, of Geo. H. McFadden & Brother, in commenting upon the rubber market, calls attention to the fact that rapid strides are being made in Europe in the manufacture of automobiles and that further increases will have a permanent effect on the rubber market. "We think," said Mr. Hammesfahr, "that this particular new development in the situation is an item which crude rubber consumers and traders in the United States will have to give much more attention to than heretofore."

CHINESE IMMIGRATION TO MALAYA SETS RECORD

The number of immigrants to the Straits Settlements from China during 1927 totalled over 359,262, an increase of 3.06 over the figures for 1926, according to the annual report of the Secretary for Chinese affairs of the Straits Settlements. This number constitutes a record.

During the year there were no restrictions on immigration. Passage rates for the first six months of the year were normal, but later were lower than usual, especially from Amoy. The comparative prosperity of the rubber and tin industries of Malaya, combined with extremely unsettled conditions obtaining throughout 1927 in those Southern Provinces of China from which the bulk of the immigrants to Malaya come, was the principal cause of the increase.

COOK TO CONTINUE PHILIPPINE RESEARCH

The Department of Agriculture is expected to send O. F. Cook, an expert of the Bureau of Plant Industry, to the Philippines within the next month to continue the research which has been conducted for several years in the experimental cultivation of rubber in the Islands. These experiments, coupled with an educational campaign directed to the Filipino planter, are gradually bearing fruit in the form of the development of several scattered rubber holdings.

Congress appropriated a total of $105,000 at the last session, for research purposes in the Philippines and other tropical areas.

RUBBER ON EXCHANGE SHOWS STEADY TONE

Factory Interest on the Increase—Distant Future Positions Still Weak as Result of Uncertainty After November 1.

THE crude rubber market, as reflected by the price levels prevailing daily on the Rubber Exchange of New York, has held firm and practically unchanged during the last fortnight. Trading has been stimulated by an increasing factory demand but actual sales have dropped off at every advance. There was a slight recession at the end of July when spot went to 19.00 but fluctuations between extremes have been confined within the narrow limits of 50 points over the entire two weeks' period.

Within the last few days there has been considerably more trade interest probably occasioned by fresh reports from tire manufacturers of an unusually high rate of manufacturing for this season of the year.

The fear of heavy accumulations in the Middle East against shipment after November 1 was somewhat allayed by the report of the official census of stocks in British Malaya as totaling 58,327 tons as of June 30. Analyzing this figure with a view of determining what the excess accumulation will be on November 1, one of the leading rubber trading houses estimates the unshipped stocks on that date at 75,000 tons. While the effect of that amount of rubber on the market is not minimized by the trade, the present statistical position of the commodity is strengthening up to the point where volume of visible stocks is so much reduced that there is reason to believe that the dumping of this rubber may be more easily absorbed than was at first imagined.

On the other hand the market is still nervous as to the future as reflected by the quotations of the distant future positions and there is an increasing tendency to buy this year's deliveries and sell next year's against them. This accounts for the discounts prevailing on the 1929 positions.

The table below indicates the daily fluctuations in prices on the Exchange and the daily volume of sales.

First Fatality in Liberia

News of the first fatality among the American staff of the Firestone Plantations Company in Liberia was recently received by radio at Akron, reporting the death of Frank Koethe who was killed in an automobile accident. No details of the accident were given in the message.

CATALPO!

Closing Prices on Rubber Exchange of New York, Inc.

FROM JULY 21 TO AUGUST 4, 1928

	Date	Spot	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Sales*
July	21	19.40	19.40	19.40	19.40	19.40	19.40	19.30	19.30	19.30	19.30	19.30	19.30	——	79
	23	19.40	19.30	19.40	19.30	19.30	19.30	19.20	19.20	19.30	19.20	19.20	19.20	——	79
	24	19.20	19.20	19.20	19.10	19.20	19.20	19.00	19.00	19.00	19.00	19.00	19.00	——	377
	25	19.30	19.30	19.20	19.10	19.10	19.30	19.00	19.10	19.10	19.10	19.10	19.10	——	130
	26	19.20	19.20	19.20	19.20	19.20	19.20	19.00	19.00	19.00	19.00	19.00	19.00	——	70
	27	19.00	19.00	19.10	18.90	19.00	19.00	18.80	18.80	18.90	18.80	18.80	18.80	——	502
	28	19.00	19.00	19.00	19.00	19.00	18.90	18.70	18.80	18.80	18.80	18.80	18.80	——	50
	30	19.00	19.00	19.00	19.00	19.00	19.00	18.80	18.90	18.80	18.90	18.80	18.90	——	160
	31	19.10	19.10	19.10	19.10	19.20	19.10	18.90	18.90	18.90	18.90	18.90	18.90	——	188
Aug.	1	19.10	19.10	19.20	19.20	19.20	19.20	19.10	19.00	19.10	19.00	19.00	19.00	19.00	142
	2	19.30	19.30	19.20	19.30	19.30	19.20	19.20	19.20	19.20	19.20	19.20	19.20	19.20	219
	3	19.50	19.40	19.40	19.50	19.50	19.50	19.40	19.40	19.50	19.40	19.40	19.40	19.40	672
	4	19.40	19.40	19.40	19.40	19.40	19.40	19.20	19.30	19.40	19.40	19.40	19.40	19.40	103

*In lots of 2½ tons each

Rubber Goods and Specialties

Balloons in Floral Designs

A series of balloons printed with artistic floral designs has been added to the already extensive line of the Barr Rubber Products Company, Sandusky, O. The numbers are said to be not only new to Barr, but also new to the trade. The design

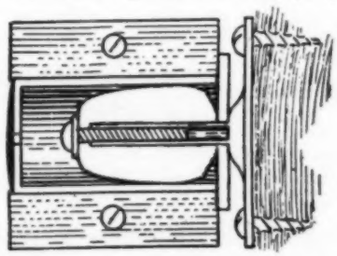
ornaments the entire balloon, each flower being printed in colors to harmonize with the respective color of the balloon. The color and workmanship on this series is of a very high order. The line is being offered in several sizes.

Cupples Has New Tube

The Cupples Company, of St. Louis, Mo., has announced through R. B. Tracy, eastern sales manager, the launching of a new line of inner tubes under the trade name of Exton tubes. They were placed on the market in all sizes on August 1. The company is reported to be enjoying a successful year with their special brands.

New Door Snubber

A noiseless door snubber, the chief feature of which is a rubber plunger, is the latest device offered to the trade by the King Manufacturing Company, 6135 Broadway, Chicago. It consists of two main parts, a cylinder attached to the door frame in the usual position and a rubber plunger which rides at the top of the door in a corresponding position. Before the moving door can slam against the door jam, the



comb-shaped plunger wedges into the cylinder and the force of the door is absorbed against the cylinder wall and the air compressed in the cylinder. The plunger is made of molded rubber. As wear develops a patented adjustment screw can be tightened and the diameter of the plunger increased to its original size.

Rubber Weatherstrip

An efficient and economical type of weatherstrip in the form of rubber tubing is being placed on the market by the Lakewood Rubber Products Company, Cleveland, O. Ordinary weatherstrip made of leather or felt often loses its efficiency under exposure to the elements. The rubber weatherstrip is moisture proof and will not quickly deteriorate and is not affected by heat or cold. It comes in reels containing 100 or 500 feet for easy handling by the dealer, It is claimed by the manufacturers that it will keep its springiness and shape for several years and is cheaper than the usual article on the market.

Leg Cushions for Auto Seats

A cushion of soft rubber has been developed for the legs of seats in automobiles by the Marvel Products Company, Cleveland, O. The device is of simple construction and can be installed in a few seconds by simply forcing it into place over the front seat legs.

They are designed to help eliminate road shocks and jars, give added height to the

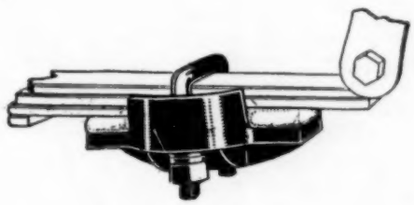
front seat, prevent noise and vibration and to save wear on the floor covering when the front seat is thrown back in position. They are made in two shapes for either ball-shaped or tapered legs.

Bathing Beach Ensemble

The latest thing in the rubber bathing goods line is the complete bathing "ensemble" which is being featured by the Omo Manufacturing Company, Middletown, Conn. The ensemble includes a rubber beach jacket with pockets, bathing cap, belt, bathing bag and a rubber play ball. The beach jacket comes in two colored, wide striped rubber, just large enough to be comfortable and with sleeves and wide collar to prevent extreme sunburn. Cap, belt and bathing bag come in colors to match.

Weed Spring-Check

The American Chain Company, Bridgeport, Conn., has introduced the Weed rubber-cushioned spring-check for installation on several well-known makes of automobiles. It provides smooth riding qualities by checking the return action of the springs



and easing them into a normal position after the car hits a bump or runs into a hole. The device consists of three parts as shown in the illustration; a cushion of springy rubber, a malleable iron housing for the cushion and a U-shaped bolt which clamps the spring-check against the lower end of the leaves of the car spring.

Cushion Seats for a Dime

The Sponge Rubber Company, Derby, Conn., have developed a novelty in cushion seats which should find a ready market at baseball parks, stadiums and the like. The article consists of a compact steel box to be screwed on the upper side of wooden seat. On inserting a dime, a flap flies open and reveals a Fabricoid-covered cushion of sponge rubber equipped with a folding back rest. The device is to be sold under the name of E-Z-E seat. It is understood that the company recently supplied 5,000 of these devices to the Polo Grounds, New York City.

Campaign Balloons

The Oak Rubber Company, Ravenna, O., has been quick to grasp the opportunities offered by the political campaign by manufacturing a range of balloons with the pictures of the nominees of the Republican and Democratic parties printed on them. The

Oak Company reports that "the radios had hardly cooled off from the convention oratory when demands for balloons with the presidential candidates' pictures began pouring into the sales office." It is understood that the balloons will be offered the trade in various sizes.

Rubber News Around the World

DENMARK OFFERS GOOD MARKET FOR AUTO TIRES

Has Larger Percentage of Automobiles Per Capita, Outside of U. S., Than Any Other Nation—Domestic Production of Tires Not Sufficient for Local Needs.

WITH the rapid strides which Denmark, in spite of its comparative small area, is making as a market for automobiles, the rubber manufacturing industry is bound to show an increase in production of tires in the next few years, is the statement of United States Trade Commissioner Harry Sorenson, recently returned from his post at Copenhagen where he has represented the Department of Commerce for the last eight years.

"Denmark, with the exception of the United States, leads the world in the number of automobiles per capita," is the astounding statement of Mr. Sorenson. "During 1927, a total approximating 26,000 passenger and commercial cars were imported into Denmark. At the same time the local production of tires is only sufficient to fill a small proportion of the yearly local consumption and the market will offer a considerable opportunity to American tire manufacturers for some years to come.

Only One Manufacturer of Tires

"Only one factory of importance is manufacturing tires at the present time, the well-known firm of Schonning and Arve, at Copenhagen, but their production is far inadequate to meet the demand. This firm also produces, however, a fair percentage of the mechanical goods of the local factories.

"In the line of footwear, principally galoshes, the Coddan Company at Kjoge, is the leading and practically the only manufacturing establishment of note and fills a fair proportion of the nation's requirements, although a considerable import trade in footwear is still in the hands of other countries."

Mr. Sorenson is now on tour in the United States and will lecture and hold conferences with commercial bodies interested in Danish and Norwegian trade possibilities. On his return to Washington he will go on a well-earned vacation and will then be assigned to a domestic post in the department for an indefinite period.

HENLEY'S CONCENTRATES ON GIANT PNEUMATICS

At the annual meeting of W. T. Henley's Telegraph Works Co., Ltd., which has just been held in London, Sir George Sutton, the chairman, said that greatly improved results had been experienced by the company's subsidiary, Henley Tire & Rubber Co. The demand for giant pneumatic tires for passenger buses and motor trucks shows every sign of becoming very large in the United Kingdom and the firm is paying great attention to this branch of the business. Tires are the principal product of the subsidiary and the tire factory is now employed to its utmost capacity.

HARRY SORENSON
U. S. Trade Commissioner at Copenhagen

NEW DUNLOP-MACINTOSH SUBSIDIARY IS FORMED

A Dunlop subsidiary has been formed in England under the name of Macinlop, Ltd., with the object of selling the general rubber goods produced by the old established firm of Charles Macintosh & Co., Ltd. A fusion of the Macintosh interests and those of the Dunlop Rubber Co., Ltd., took place in 1926. Since that date the immense resources of the Dunlop Company have been utilized in reorganizing and extending the Macintosh factories and investigating the sales possibilities of the various Macintosh products.

In the industrial rubber goods field the name Macintosh is very well known in the United Kingdom and it has been thought desirable to incorporate the two names. This explains the newly coined word "Macinlop." It is stated by Dunlop that Macinlop goods will have behind them the great experience of the Macintosh organization and the world-wide production and marketing organization of the Dunlop Company.

Macinlop produces belting, hose, general mechanicals, industrial footwear, tiling, flooring, surgicals, fabrics, pneumatic upholstery, and a great variety of rubber goods for industrial and other purposes. Its commercial development department advises customers on the most economical ways of using rubber in their businesses, and investigates problems involving the use of any industrial rubber product. The head office of Macinlop, Ltd., is at Cambridge Street, Manchester, England.

Practically all of the cars turned out by the "Praga" works, Prague, are equipped with American casings.

MORE BRITISH RUBBER COMPANIES AMALGAMATE

The latest move toward big amalgamations among rubber producing companies in Great Britain is the proposal for the absorption of the Selaba Rubber Estates by the Golden Hope Rubber Estate. Under the agreement the capital of the Golden Hope is to be increased to £250,000 by the creation of £150,000 additional shares of £1 each, which will be substituted for the £150,000 in Selaba shares now existing.

Selaba is to go into voluntary liquidation and Golden Hope is to acquire the entire undertaking and assets of Selaba as from January 1, 1929. After the amalgamation, Golden Hope will own 5,335 acres of rubber.

Harrisons and Crosfield have been the agents of Golden Hope and Selaba since they were incorporated in 1905 and 1909 respectively. If the amalgamation is approved, E. Macfadyen and E. L. Hamilton will join the board of Golden Hope, while H. Eric Miller, who is a director of both companies, will retire. Mr. Macfadyen will succeed him as chairman of Golden Hope.

PLANTATION COMPANIES SHOW DROP IN PROFITS

The extent to which rubber growers' profits have been affected by the prevailing crude rubber prices is indicated by the reports of two Malayan companies which have recently been issued. A meagre profit of $4,030 on a capital of $445,000 is reported by the Perak Rubber Plantations, Ltd., in comparison with $84,635 for the previous year. The net earnings of the Port Dixon-Lukut Rubber Estates for the past year shrunk to $113,830 against $321,610 for the previous year.

No dividend is to be paid by the first-named company whereas a year ago shareholders received 17½ per cent while for the year before that 50 per cent was paid. The latter company's annual dividend is to be 7½ per cent, against 17½ per cent last year, while the reserve, which a year ago received $50,000, this year gets nothing at all. These examples are typical of the reports of the majority of companies now holding their annual meetings.

The South African Rubber Manufacturing Co., Ltd., is now being operated by the Leyland and Birmingham Rubber Co., Ltd., of Great Britain. The works of the former company at Howick, Natal, are in process of being completely overhauled.

CATALPO!

WADSWORTH CITIZENS PURCHASE EXCEL PLANT

The Wadsworth Merchants' Association of Wadsworth, O., has announced the purchase of the Excel Rubber Company through the Medina county court at a cost of $25,000. It is understood that a committee of the Association will assume charge of the plant and put it in operation. The new project will be launched as a stock company and it is planned to hold a meeting of Wadsworth citizens to endorse the scheme and authorize the flotation of stock.

In view of the presence of F. A. Seiberling, president, and William Wolfe, factory manager of the Seiberling Rubber Company, at the meetings of the Association in connection with the transaction, it is rumored that the Seiberling Company may consider the purchase of the plant from the Association after it has been placed in operation.

The Excel plant was last operated by the Rex Rubber Company but was later put in the hands of receivers. The original cost of the plant is said to have been in the neighborhood of $350,000.

Decreases Accident Rate

In line with the efforts being made by rubber factories to reduce the high accident rate now prevailing throughout the industry as a whole, the Goodyear Tire & Rubber Company has recently announced that they have been able to reduce by more than one third the number of injuries during the first six months of the current year as compared with the same period last year.

The reduction has resulted in a saving to employees of $46,332 in wages, figuring each day saved at $6.00. As a part of the safety campaign the different divisions of the company are competing in a contest. The division showing the smallest number of days lost for each 1,000 will be given the "safety" loving cup.

Footwear Managers Meet

The annual convention of over 100 branch managers and footwear sales managers of the United States Rubber Company, representing the distributing agencies in all parts of the United States, was convened this year at Williamsport, Pa., on July 16.

The sessions were opened by T. J. Needham, general manager of footwear sales, who read a letter from C. B. Seger, president of the United States Rubber Company, congratulating the sales managers on the increase in footwear sales since the first of the year. Fred P. Lundy, assistant manager of footwear sales, gave a detailed presentation of the company's 1928-29 line.

Specifications Proposed

The Federal Specifications Board, Washington, D. C., have completed the formulation of proposed specifications on rubber packings and gaskets, water and wash deck hose, water suction hose and oil suction and discharge hose. Manufacturers are being asked to examine the specifications and suggest any changes which might be of benefit.

The offices of the Rubber Association of Canada have been moved from the Reford Building to the Harbor Administration Building, Toronto.

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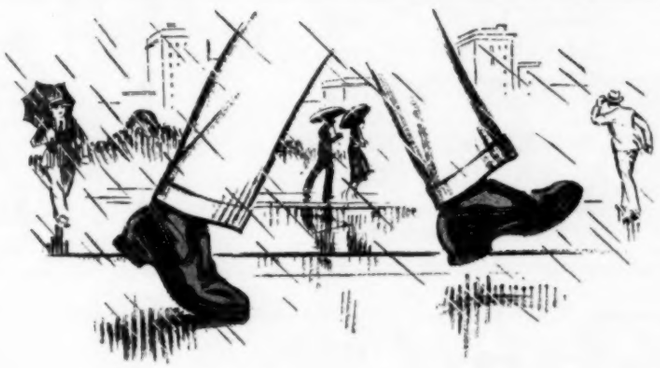

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Akron, Ohio

GOODYEAR REINSURES ITS EMPLOYEES PENSION PLAN

Through the Goodyear Investment Corporation, the Goodyear Tire & Rubber Company, of Akron, O., has arranged with the Metropolitan Life Insurance Company to reinsure the pension plan which for a number of years has been operated for the benefit of Goodyear employees. Unique in being the first contract of its sort made in this country between an industrial corporation and an insurance company, the reinsurance plan provides a guarantee of the rubber company's voluntary pension commitments.

While hundreds of Goodyear employees are indirectly affected by the new arrangement, the contractual relations established exist solely between the insurance company and the Goodyear Investment Corporation, the latter through the Goodyear Tire and Rubber Company dealing directly with the employees.

The arrangement provides the maximum of security and soundness for the retirement plan with the minimum of administrative detail and expense.

It is reported that the Ford Motor Company has shipped to date approximately 250,000 of the new Model A cars and production has been speeded up to slightly over 3,000 per day. All 36 domestic assembly plants of the Ford company are in operation. Every effort is being made to set up the production by September to 5,000 cars per day.

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CATALPO!

LATE MARKET PRICES

Crude, Scrap & Reclaimed Rubber - Cottons and Fabrics

NEW YORK, AUGUST 6, 1928

COTTON

IN the face of improved weather conditions in the growing belts, the cotton market has exhibited a downward movement from the high levels of two weeks ago. The crop as a whole is reported to have made good progress. The drop in the market has brought about heavy liquidations which in turn have aided the bearish side. With the continuation of favorable weather advices any substantial rallies in the market are not looked for.

On the other hand a feeling of depression apparently rests on the manufacturing industry and it is now realized that for the past few years the mill operations have been carried on at a pace not justified by the world's normal requirements. Curtailment in production is widespread at the moment and world spinners' takings of American cotton for the twelve months ending July 31 are likely to be approximately 2,650,000 bales less than the corresponding period of 1926-27.

High, low and closing quotations, as of August 6, were as follows:

	High	Low Aug. 6	Close	Close July 19
August	19.18	19.18	19.18	
October	19.67	19.31	19.38	21.24

Tire Fabrics

The tire fabrics market has been fairly active during the last fortnight with considerable interest manifested in Egyptians. The demand somewhat reflects the reports of unusual activities on the part of tire manufacturers. Mills are reported to be operating on heavy production schedules. Late prices follow:

CORD			
Peeler, carded, 23/5/3	lb.	.44 @	.45½
Peeler, carded, 23/4/3	lb.	.45½@	.46½
Peeler, carded, 13/3/3	lb.	.40½@	.41½
Peeler, carded, 15/3/3	lb.	.41½@	.42½
Egyptian, carded, 23/5/3	lb.	.54 @	.55
Egyptian, combed, 23/5/3	lb.	.57 @	.58
CHAFERS			
Carded, American, 8 oz.	lb.	.40 @	.41
Carded, American, 10 oz.	lb.	.40 @	.41
Carded, American, 12 oz.	lb.	.41 @	.43
Carded American, 14 oz.	lb.	.39 @	.43
LENO BREAKER			
Carded American, 8¼ oz.	lb.	.39 @	.43
Carded American, 10¼ oz.	lb.	.39 @	.43
SQUARE WOVEN			
Carded American, 17¼ oz. 23-11 ply	lb.	.45 @	.46
Carded American, 17¼ oz. 10-5 ply	lb.	.39 @	.40

Sheetings

Prices on 40-inch sheeting constructions have dropped during the fortnight in line with the decline in raw cotton and further influenced by the slackness in demand. There has been a marked absence of interest in sheetings for some time and the expected renewal in buying has not materialized. The latest prices follow:

40-inch, 2.50-yard	yd.	.12⅜@	.12⅞
40-inch, 2.85 yard	yd.	11⅜@	.11½
40-inch, 3.15-yard	yd.	.12¼@	.12⅝
40-inch, 3.60-yard	yd.	.09¾@	.10
40-inch, 3.75 yard	yd.	.09 @	.09¼
40-inch, 4.25-yard	yd.	.08 @	.08¼

Ducks

Contrary to the other cotton goods markets, ducks have gained over the last two weeks through the continued demand and under an active market. Considerable new business is reported and apparently a number of buyers are being forced into the market to fill their pressing requirements even in the face of the improved prices. The latest quotations were as follows:

Belting and Hose	lb.	.36½@	.38
Enameling	lb.	.38 @	.40
Single filling	lb.	.16¾@	.18½
Double filling	lb.	.18½@	.19

RECLAIMED RUBBER

For the first time since the drastic decline in crude rubber several months ago the reclaimers report a slowness in demand. This has been long anticipated and was considered as a logical result of the lower crude prices, but for several months the reclaimed market felt no slackening in demand. June was the first month to show a decline in reclaimed tonnage consumed, but it is expected that July will register an even greater drop. At the same time reclaimers are reported to be still running their plants at near capacity. Latest prices are as follows:

High Tensile			
Super-Reclaim No. 1 Black	lb.	.12½@	.13
Super-Reclaim No. 2 Black	lb.	.11½@	.11¾
High Tensile Red	lb.	.13½@	.13¾
Shoe			
Unwashed	lb.	.07¼@	.07½
Washed	lb.	.10 @	.10¼
Tube			
No. 1 (Floating)	lb.	.14½@	.15
No. 2 (Compounded)	lb.	.11 @	.11½
Tires			
Black, washed		.09½@	.10
Black, unwashed		.07¾@	.08
Black selected tires	lb.	.08¼@	.08½
Dark Gray	lb.	.09¾@	.10
Light Gray	lb.	.12 @	.12½
White	lb.	.13 @	.13½
Truck, Heavy Gravity	lb.	.07¼@	.07½
Truck, Light Gravity	lb.	.07¾@	.08
Miscellaneous			
Mechanical Blends	lb.	.06⅞@	.07½
Red	lb.	.13½@	.13¾

Scrap Rubber

The scrap rubber market is showing a dullness in keeping with the reclaimed market and while collections have slightly improved the prices offered by dealers are still discouraging enough to keep heavy accumulations down. Deliveries are being made in the case of contract business, but little or no new sales are reported. Prevailing prices follow:

(Prices to Consumer)

Auto tire peelings	ton	35.00	@37.50
Standard White auto	ton	55.00	@57.50
Mixed auto	ton	23.50	@24.00
Bicycle tires	ton	25.00	@27.50
Clean solid truck tires	ton	22.00	@24.00
Boots and shoes	lb.	1.30	@ 1.40
Arctics, trimmed	lb.	.00¾@	.01
Arctics, untrimmed	lb.	.00½@	.00¾
Inner tubes, No. 1	lb.	.06¾@	.07
Inner tubes, No. 2, compounded		.04¼@	.04¼
Inner tubes, Fed	lb.	.05½@	.05¾
Air Brake Hose	ton	35.00	@37.50
Rubber Hose	ton	18.00	@20.00

CRUDE RUBBER

THE crude rubber market has maintained a steady tone throughout the past fortnight, closing on August 6 at a slightly higher figure than two weeks ago, but for the most part the market can be said to have rested on an even keel during the entire period with spot at around 19½ cents. Both buying and selling operations have been held in check by a display of caution on both sides. A fair demand, however, has prevailed with factories showing a genuine buying interest on all recessions but withdrawing support at the higher levels.

The reports of heavy consumption of crude rubber for July and the current month are well supported by the inquiries for both standard and off-grades which continue unabated and is causing considerable activity on the part of local dealers and commission houses which are coming into the market in anticipation of a still wider participation by manufacturers for spot deliveries to complete early requirements.

The position of future deliveries, however, is still uncertain and are being offered at a discount. The market is closely watching the accumulations on the estates in the Middle East, but anxiety has been somewhat eleveated by the continued decline in visible stocks in the United States in the face of the record high consumption in the manufacturing industry. Stocks in London advanced last week by a trifling 197 tons, the first advance in fifteen weeks, but another decline of approximately 1,000 tons is expected on August 11.

Prices on the New York outside market as of August 6 were as follows:

Plantations—			
Ribbed Smoked Sheets— Spot		19¾@	.19¾
Aug.-Sept.		.19¾@	.19¾
Oct.-Dec.		.19¾@	.19¾
First Latex, crepe spot		.20¼@	.20⅜
Amber Crepe, No. 2		.19¾@	.19⅞
Amber Crepe, No. 3		.19⅝@	.19¾
Amber Crepe, No. 4		.19½@	.19⅝
Brown Crepe, Rolled		.19⅝@	.19¾
Brown Crepe, Clean, thin		.19½@	.19¾
Brown Crepe, specky		.19 @	.19¼
Liquid Latex, per gal.		@ 1.50	
Paras—			
Up-river Fine		.22 @	.22½
Up-river Medium		Nominal	
Up-river Coarse		.14¼@	.14½
Acre Bolivian, fine		.23 @	.23½
Caucho Ball, Upper		.12¾@	.13¼
Islands, fine		.16 @	.16½
Centrals—			
Central, scrap		.14¾@	.15
Esmeraldas		.14¾@	.15
Balata—			
Block, Colombia		Nominal	
Block, Cuidad		.38 @	.39

LONDON MARKET

Closed for Holiday.

SINGAPORE MARKET

Closed for Holiday.

Charles T. Wilson Co., Inc.
44 Beaver Street New York

Importers of

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Members Rubber Exchange of New York, Inc.
Members Rubber Exchange Clearing House, Inc.

AKRON OFFICE: 507 Second National Building
Telephone Main 3799

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LATE RUBBER CHEMICAL PRICES

Accelerators — Colors — Softeners — Compounding Materials

NEW YORK, AUGUST 6, 1928

DEMAND for rubber chemicals and compounding materials continues at peak levels. Factories in general are extremely busy with tire production in the Akron district making new records. Goodyear, for instance, made 70,000 tires in one day last week. Other tire plants also are maintaining high production schedules. Mechanicals are fairly active with footwear plants operating at a slower pace. No appreciable change in this situation is expected for several weeks at least.

A new anti-oxidant, called Age-Rite White, has just been announced as being particularly effective in acid-cured goods and for use in light colored ordinary heat cured goods. It is said to be practically free from discoloration. Prices are unchanged with current quotations as follows:

ACCELERATORS

Organic				
A-7	lb.	.55	@	.59
A-11	lb.	.62	@	.66
A-16	lb.	.57	@	.61
A-19	lb.	.58	@	.62
A-20	lb.	.64	@	.68
Aero-X	lb.	.75	@	—
Aldehyde ammonia, crystals	lb.	.65	@	.70
Aniline oil, drums, f.o.b. works	lb.	.15	@	.16¼
Crylene	lb.	.55	@	.65
paste	lb.	.45	@	.55
Di-Ortho-Tolyiguanidine	lb.	.48	@	.50½
Diphenyiguanidine	lb.	.40	@	.42½
Ethylidene aniline	lb.	.45	@	.47½
Formaldehyde Aniline, 140° m. p.	lb.	.33	@	.35½
Formaldehyde Aniline, 60° m. p.	lb.	.31	@	.33½
Grasselerator 102	lb.	.62½	@	.67½
Grasselerator 552	lb.	4.45	@	4.60
Grasselerator 808	lb.	1.00	@	1.10
Grasselerator 833	lb.	1.40	@	1.55
Heptene	lb.	.45	@	.55
Hexamethylene-tetramine	lb.	.57½	@	.60
Lithex	lb.	.18	@	.20
Methylenedianilide	lb.	.36	@	.37
Monex	lb.	3.25	@	—
Oynone	lb.	.68	@	.80
Para-Nitrosodimethylaniline, f.o.b. works	lb.	.92	@	.96
Piperidine-Piperidyldithio-Carbamate	lb.	4.45	@	4.60
R & H 40	lb.	.40	@	.42½
R & H 50	lb.	.40	@	.42½
R & H 397	lb.	.75	@	.77½
Safex	lb.	1.20	@	1.25
Tensilac, No. 39	lb.	.50	@	.52½
Tensilac, No. 41	lb.	.50	@	.52½
Thermic F	lb.	.50	@	.55
Thiocarbanilide, drums	lb.	.25½	@	.26½
Thionex	lb.	3.25	@	—
Trimene	lb.	.75	@	—
base	lb.	1.20	@	—
Triphenyiguanidine	lb.	.65	@	.70
Vulcanex	lb.	.68	@	—
Vuleone	lb.	.68	@	—
Vulcanol	lb.	1.03	@	1.08
Waxene	lb.	.30	@	.32
Z 88	lb.	.65	@	.69
Inorganic				
Lead, sublimed blue	lb.	.08¼	@	.08¾
Lead, white	lb.	.10¼	@	.12½
Litharge, domestic	lb.	.09½	@	.12
Magnesia, calcined, light	per 100 lb.	5.35	@	5.45
heavy	per 100 lb.	3.65	@	3.75

COLORS

Blacks (See Compounding Materials)				
Blues				
Prussian	lb.	.33	@	.35
Ultramarine	lb.	.06	@	.30
Browns				
Sienna, Italian	lb.	.05	@	.12½
Umber, Turkey	lb.	.04½	@	.07
Greens				
Chrome, light	lb.	.27	@	.31
medium	lb.	.29	@	.32
dark	lb.	.31	@	.34
Chromium Oxide, bbl.	lb.	.24	@	.36
Reds				
Antimony				
crimson, 15/17	lb.	.44	@	.50
sulphur free	lb.	.50	@	.55
golden 15/17 F.S.	lb.	.18	@	.22
Indian English	lb.	.08	@	.12
Domestic (Maroon)	lb.	.08	@	.12
Oximony	lb.	.13¼	@	—
Red oxide, pure	lb.	.10	@	.12
Venetian red	lb.	.03	@	.06
Vermillion, quicksilver, English	lb.	1.85	@	1.95
Whites				
Lithophone, Akcolith	lb.	.05 3/5	@	.06
Lithophone, Azolith	lb.	.05¼	@	.05¾
Lithopone, Vanolith	lb.	.05¾	@	—
Titanox	lb.	.10	@	.10½
Cal. Base Pigment	lb.	.10	@	.10½
Zinc Oxide—American Process				
American Azo:				
ZZZ (lead free)	lb.	.06½	@	.07
ZZ (leaded)	lb.	.06⅝	@	.07⅛
Zinc Oxide—French Process				
White seal	lb.	.11⅞	@	—
Green seal	lb.	.10⅞	@	—
Red Seal		.09⅞	@	—
Yellows				
Chrome	lb.	.15½	@	.16½
Ocher, French medium	lb.	.03½	@	.06
domestic	lb.	.01⅝	@	.02

COMPOUNDING MATERIALS

Aluminum Flake	ton	21.85	@	24.50
Ammonia carbonate	lb.	.10½	@	.12
Asbestine	ton	14.75	@	18.00
Barium carbonate	lb.	.03½	@	.05
Barium Dust	lb.	.05	@	.06
Barytes southern off-color,	ton	12.00	@	18.00
Western prime white	ton	23.00	@	—
imported	ton	27.00	@	36.00
Basofor	lb.	.04½	@	—
Blacks				
Arrow "Aerfloted"	lb.	.08	@	.12
Bone Black	lb.	.05½	@	.11
Carbon, compressed	lb.	.08	@	.12
Carbon, uncompressed	lb.	.07½	@	.11½
Drop Black	lb.	.06	@	.10
Fumonex	lb.	.06	@	.09
Gastex	lb.	.05¼	@	.05½
Lamp Black	lb.	.12	@	.40
Micronex	lb.	.08½	@	.12½
Velvetex carbon	lb.	.04½	@	.06
Blanc fixe dry f.o.b. works	lb.	.03½	@	.05⅝
Carrara filler	lb.	.01¾	@	.02
Catalpo (fact.)	lb.	.02	@	—
Chalk	ton	12.00	@	14.00
Clay, China, domestic	ton	8.00	@	9.00
Aerfloted Suprex	ton	9.00	@	20.00
Congaree, c. l. f.o.b. mine	ton	9.00	@	—
Mineral Flour, c. l. fob mine	ton	20.00	@	23.00
Tensulite		15.00	@	—
Glues, extra white	lb.	.22	@	.26
medium white	lb.	.20	@	.24
Magnesia, carbonate	lb.	.08¾	@	.11
Mica, powdered	ton	65.00	@	80.00
Rotten Stone (powdered)	lb.	.02½	@	.04½
Soapstone, powdered	ton	15.00	@	22.00
Starch, powdered	cwt.	3.30	@	3.70
Talc, domestic	ton	12.00	@	15.00
Velvetex	lb.	.04	@	.07
Whiting, commercial	cwt.	.85	@	1.00
English cliffstone	cwt.	1.50	@	—
Superfine	ton	10.00	@	12.00
Witco	ton	12.00	@	—
Wood pulp XXX	ton	45.00	@	—
Wood pulp X	ton	25.00	@	—
Zinc Carbonate	lb.	.09½	@	.10½
Zinc Stearate	lb.	.18½	@	.19½

MINERAL RUBBER

Genasco (factory)	ton	50.00	@	52.00
Montezuma, solid	ton	28.00	@	36.00
Montezuma, granulated	ton	32.00	@	42.00
Paradura	ton	62.50	@	65.00
Pioneer, MR, solid	ton	42.00	@	45.00
Pioneer-granulated	ton	52.00	@	55.00
R & H Hydro-Carbon	ton	27.05	@	29.00
Robertson, MR, solid	ton	34.00	@	80.00
M.R. (gran)	ton	38.00	@	80.00

SOFTENERS

Acids				
Nitric, 36 degrees	cwt.	5.00	@	5.25
Sulphuric, 60 degrees	ton	10.50	@	11.50
66 degrees	ton	15.00	@	16.00
Tartaric, crystals	lb.	.35	@	.36
Acids, Fatty				
Stearex	lb.	.11	@	.15
Stearic, double pressed	lb.	.11½	@	.12½
Alkalies				
Caustic soda, 76%	cwt.	3.76	@	3.91
Soda ash, 58% C.L.	cwt.	1.40	@	
Oils				
Corn, refined, bbls.	lb.	.11	@	.11½
Cottonseed, crude		.08½	@	.08¾
Cycline	gal.	.27	@	.34
Degras (c.l. 100 bbls.)	lb.	.03¾	@	—
Less c. l. (10-25 bbls.)	lb.	.04	@	—
Lots less than 10 bbls.	lb.	.04¼	@	.04½
Fluxrite	lb.	.05	@	.06
Hexalin	lb.	.60	@	—
Acetate	lb.	.70	@	—
Linseed, Raw C.L. bbl.	lb.	.09½	@	.10
Palm Lagos	lb.	.07¼	@	.07½
Niger	lb.	.07¾	@	.08
Vansulol	lb.	.10½	@	—
Para-Flux	gal.	.17	@	—
Peanut, domestic, crude	lb.	.12	@	.12¼
Petrolatum, white	lb.	.08	@	.08½
dark amber	lb.	.03⅝	@	.03⅝
Pine, steam distilled	lb.	.70	@	
Rapeseed, refined	gal.	1.04	@	1.06
second rectified	gal.	.58	@	—
Resins and Pitches				
Pitch, Burgundy	lb.	.06½	@	.07½
coal tar	gal.	.05½	@	.06
pine, 200 lb. gr. wt.	bbl.	9.00	@	10.00
Rosin, grade K, 280 lb. bbl.	bbl.	8.55	@	—
Pigmentar	gal.	.33	@	.41
Tar Retort, 50 gal.	bbl.	12.50	@	13.00
Solvents				
Acetone, pure	lb.	.13	@	
Alcohol denatured, No. 1 bbls.	gal.	.37½	@	.44½
Benzol, 90%	gal.	.28	@	—
Carbon bisulphide	lb.	.05½	@	.06¼
Carbon tetrachloride	lb.	.06¼	@	.07
Motor gasoline, steel bbls.	gal.	.17	@	—
Naptha, solvent	gal.	.35	@	.40
Turpentine, spirits	gal.	.60	@	.64
wood	gal.	.50	@	.54
Waxes				
Beeswax	lb.	.56	@	.58
Carnauba	lb.		@	.50
Ceresin, white	lb.	.10	@	.11
Montan, crude	lb.	.07	@	.07½
Ozokerite, black	lb.	.24	@	.25
green	lb.	.26	@	.30
Miscellaneous				
RSL Mold Solution	gal.	.75	@	.100

ANTI-OXIDANTS

Antox	lb.	.79	@	.83
Neozone	lb.	.74	@	—
Oxynone	lb.	.68	@	.80
Resistox	lb.	.54	@	.57
Stabilite	lb.	.65	@	—
VGB	lb.	.55	@	.66

SUBSTITUTES

Black	lb.	.08	@	.14
White	lb.	.10	@	.16
Brown	lb.	.08	@	.15

VULCANIZING INGREDIENTS

Sulphur Chloride (drums)	lb.	.03¼	@	.03½
Sulphur flour,				
Superfine bags	cwt.	2.20	@	2.80
Superfine, bbls.	cwt.	2.55	@	3.10
100% pure, refined, bags	cwt.	2.60	@	3.15
bbls.	cwt.	2.95	@	3.50

TIRES & TUBES
CRUDE RUBBER

STATISTICAL SECTION

AUTOMOBILES
GASOLINE

AS the restrictions of the British rubber trade under the Stevenson Act enter upon their final quarter, unusual activity is shown in the consumption of rubber in the United States. The amount of crude rubber consumed during July is estimated as having approached closely to the 40,000-ton mark, setting a record for the entire history of the industry.

Imports of rubber have been steady, but have not kept pace with the rapid increase of production in American factories. The amount of rubber invoiced to the United States has also continued at the high levels of the past few weeks. It is expected that final figures on rubber stocks in the United States will show a considerable falling off. As predicted, the market has remained around 19½ cents and seems destined to stay there for some weeks to come.

London stocks, after showing a continuous falling off for fourteen consecutive weeks, finally picked up slightly during the last week in July, making a gain over the previous figures, but a further decline is expected.

There now remains only three more months of rubber restriction, and the price of crude today is even lower than when the measure was introduced six years ago.

Latest figures covering imports and exports from the leading consuming and producing markets have been added to the appropriate tables in this section.

PLAN OF THE SECTION

The statistics included in this section have been chosen for their constant importance to the rubber industry. The tables are reprinted in the same relative position in every issue, each table being kept current by the addition of new figures as soon as they become available. The section accordingly affords the most up-to-date, complete and convenient statistical service in the industry.

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U. S. Imports and Exports of Crude Rubber

	Gross Imports			Re-exports			Net Imports
YEARS	Long Tons	Total Declared Value	Average Declared Value per pound Cents	Long Tons	Total Declared Value	Average Declared Value per pound Cents	Long Tons
1921	185,394	73,772,677	17.76	5,716	2,414,924	18.86	179,678
1922	301,076	101,843,188	15.10	4,809	1,921,828	17.84	296,267
1923	309,144	185,060,304	26.72	8,772	5,672,319	28.87	300,372
1924	328,056	174,231,331	23.71	10,309	6,057,637	26.23	317,747
1925	396,642	429,705,014	48.36	14,827	19,847,753	59.76	381,815
1926	413,338	505,817,807	54.63	17,671	22,470,583	56.77	395,667
1927	426,258	339,874,774	35.60	27,775	24,735,488	39.76	398,483
1926:							
Jan.	42,404	72,528,151	76.36	2,059	3,747,505	81.24	40,345
Feb.	32,865	58,733,370	79.78	1,430	2,280,168	71.17	31,435
Mar.	42,152	70,589,581	74.76	1,836	2,735,234	66.51	40,316
Apr.	34,544	48,742,539	62.99	1,128	1,605,093	63.58	33,416
May	29,756	36,896,080	55.35	1,052	1,558,987	66.17	28,704
June	24,900	34,498,561	61.85	1,105	1,371,217	55.41	23,795
July	35,820	33,061,281	41.20	1,554	1,743,854	50.09	34,266
Aug.	27,400	24,670,752	40.21	1,318	1,339,563	45.38	26,082
Sept.	37,112	32,625,032	39.25	1,437	1,519,870	47.20	35,675
Oct.	29,746	25,320,558	38.49	1,366	1,316,270	43.03	28,110
Nov.	39,155	34,890,536	39.78	1,482	1,411,517	42.51	37,673
Dec.	37,754	33,261,366	39.33	1,904	1,841,305	43.16	35,850
1927:							
Jan.	43,340	36,753,719	37.86	1,525	1,444,734	42.28	41,815
Feb.	28,337	23,110,257	36.41	2,451	2,277,297	41.47	25,886
Mar.	35,515	28,693,016	36.07	2,763	3,249,665	52.50	32,752
Apr.	46,202	37,321,505	36.06	1,575	1,428,425	40.48	44,627
May	36,518	30,984,377	37.88	2,782	2,501,562	40.14	33,736
June	33,045	27,850,014	37.62	1,775	1,550,592	39.00	31,270
July	37,677	31,678,259	37.53	1,958	1,560,853	35.59	35,719
Aug.	32,810	26,396,931	35.92	1,809	1,382,768	34.12	31,001
Sept.	33,301	25,314,412	33.94	3,500	3,036,929	38.74	29,801
Oct.	30,184	22,163,282	32.78	2,513	2,042,713	36.29	27,671
Nov.	38,592	27,395,428	31.69	2,469	2,014,196	36.43	36,123
Dec.	30,737	22,213,574	32.26	2,655	2,245,754	37.77	28,082
1928:							
Jan.	39,108	30,278,444	34.56	1,988	1,734,990	38.95	37,120
Feb.	33,664	27,763,655	36.82	2,738	2,229,589	36.35	30,926
Mar.	40,688	32,109,376	35.23	3,718	2,587,434	31.07	36,950
Apr.	37,958	27,296,346	32.23	2,272	1,415,024	27.80	35,686
May	31,058	19,058,672	27.80	2,399	1,386,307	25.80	28,659
June	27,764	14,121,219	22.71	2,621	1,400,697	23.86	25,143
July							
Aug.							
Sept.							
Oct.							
Nov.							
Dec.							

U. S. Consumption of Crude Rubber

(Rubber Association of America statistics raised to 100 per cent—All figures in long tons)

Figures on Monthly Basis

	1921	1922	1923	1924	1925	1926	1927	1928
Jan.	5,045	16,938	30,106	29,058	29,638	32,196	31,518	34,403
Feb.	5,955	14,767	30,149	25,736	29,761	31,136	30,137	33,702
Mar.	9,190	21,408	36,629	28,385	33,498	32,936	36,141	35,688
Apr.	13,084	19,294	29,085	27,129	34,139	32,696	35,871	32,772
May	16,023	23,246	36,155	25,845	35,322	29,364	34,592	37,333
June	16,142	31,713	24,272	22,753	35,822	28,598	33,801	37,676
July	18,310	24,522	17,685	23,396	36,053	27,577	29,219	
Aug.	23,649	29,361	20,359	28,982	35,909	34,533	33,460	
Sept.	16,705	24,410	17,594	31,497	31,691	32,904	27,214	
Oct.	16,814	26,881	21,321	31,520	29,047	29,836	26,790	
Nov.	14,105	24,950	20,437	27,289	28,853	28,080	26,792	
Dec.	15,482	25,070	21,902	27,199	28,748	26,293	25,492	
Totals	170,504	282,560	305,694	328,769	388,481	366,149	371,027	

Figures on Quarterly Basis

Quarter	1921	1922	1923	1924	1925	1926	1927	1928
Jan./Mar.			96,776	87,609	95,263	94,301	99,216	103,558
Apr./June	65,463	127,360	89,493	75,674	104,099	87,109	103,242	
July/Sept.			55,621	83,813	99,493	93,793	89,210	
Oct./Dec.	105,962	155,067	63,617	92,656	85,789	83,212	80,860	
Totals	171,425	282,427	305,507	339,752	384,644	358,415	372,528	103,558

Note—The Rubber Association estimates its monthly rubber consumption figures to be 90 per cent complete. Up until 1925 the quarterly figures were likewise estimated to be 90 per cent complete; beginning with 1925 an estimate of 92 per cent completeness has been used. These estimates have been used in raising the figures in this table to 100 per cent. The quarterly figures are generally regarded as the most authentic; the monthly figures may be accepted as preliminary.

Rubber Invoiced to the U. S.

(Reported by American Consuls—Quantities in Long Tons)

During the Week Ended	From Br. Malaya	From Ceylon	From Dutch East Indies	From London & Liverpool	Total
June 2	3,799	1,020	1,306	1,094	7,219
June 9	4,629	209	1,373	490	6,701
June 16	3,335	326	1,652	1,020	6,333
June 23	3,787	266	1,708	2,270	8,031
June 30	4,797	1,094	1,670	821	8,382
July 7	5,231	899	1,601	842	8,573
July 14	4,403	859	2,249	277	7,788
July 21	4,879	384	1,648	320	7,231
July 28	4,685	1,065	2,083	178	8,011
Aug. 4	4,271	692	1,335	1,582	7,880

Daily Spot Closing Prices of Ribbed Smoked Sheet Rubber—*New York Market, in Cents per Pound*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Ave.
1925																																
November	—	99¾	—	98¾	98⅜	100	100¾	—	98¼	99⅝	100⅝	101⅝	104½	106½	—	99¾	90¾	93	88¼	109⅜	110⅜	110½	110⅜	109	106¼	—	108¼	108¾	—	107	—	104¾
December	106⅜	108½	107¾	107¼	108¾	—	108	109	109¾	106	105⅞	105½	—	101					88¼	86¾	—	88⅞	88⅝	88⅝	—	—	—	91	93	107	91¼	98½
1926																																
January	—	—	—	87	87¼	85½	86⅛	87½	87⅝	—	88⅜	88¼	88¼	85⅛	84½	82½	—	75½	75½	75⅛	75	72½	72½	—	68	66½	67	69¼	70½	69	—	79½
February	67	67½	66¼	66¾	68	69	—	69	67	65	66	66	65½	63	63	60½	60	60	59	61	56	55	52	51¾	51	51	51¾	—	—	—	—	62¾
March	55	58	53	53½	53¾	57½	—	56	55½	61	60	63	61½	62	62	60½	61	62	61½	61	61	60	60	59½	60	60	59½	58½	59½	58½	59
April	59	—	59	58	59	56½	56½	53	53	53	51½	50½	48½	49¼	47½	47	47	47	47½	48	48½	49	48	48	48	48	48	49	48½	53	51¼
May	48½	—	50	50¾	49¾	49¾	49¾	49½	48	49	49½	48½	47⅝	47⅝	47½	—	47½	47½	47½	47½	47½	46	46	46	46	46	46	46	46	—	—	47⅝
June	41½	—	41½	42	41¾	41½	41½	42	41½	43½	42	41½	43	43½	43	40	43	43	40	41½	41½	44	43½	43½	43	42	42	42	42	42	42½
July	42	—	42	42	42	41½	41½	41½	41½	43½	42	41½	43	43½	43	40	40	41	41	41½	41½	41	41	41½	41	41	41	41	41	39	41
August	—	—	42	42	42	41½	41½	41½	41½	43½	42	41½	43	43½	43	40	40	41	41	41½	41½	41	41	41½	41	41	41	41	41	39½	41¼
September	40¼	—	40¼	40¼	40¼	40¼	40¼	40¼	40¼	43½	42	41½	43	43½	43	40	40	41	41	41½	41½	41	41	41½	41	41	41	41	41	39½	41¼
October	43	—	43	43¼	43¼	42¾	42¾	42½	42½	42½	42	41½	43	43½	43	40	40	41	41	41½	41½	41	41	41½	41	41	41	41	41	39½	41¼
November	41¼	—	41	41¼	41¼	41½	42	41½	41½	42	41½	41½	43	43½	43	40	40	41	41	41½	41½	41	41	41½	41	41	41	41	41	39½	41¼
December	36¾	87½	87½	87½	87¾	—	87	87	87	87½	87½	87½	87	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½
1927																																
January	—	88¼	—	39	39¼	39¾	40¾	40¼	—	40½	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾
February	—	87¾	87¾	87½	87½	—	—	87¾	87¾	88	87¾	87¾	87¾	87¾	87¾	87¾	87¾	87¾	87¾	87¾	87¾	87¾	87¾	87¾	87¾	87¾	87¾	87¾	87¾	87¾	87¾	87¾
March	—	89¾	89¾	40	40¾	41	41	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾
April	—	41⅛	41¼	41	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼
May	—	40½	40¾	40½	40¾	41	41	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾
June	—	40¾	40⅛	40¼	40¼	39½	39½	39½	39½	39½	39½	39½	39½	39½	39½	39½	39½	39½	39½	39½	39½	39½	39½	39½	39½	39½	39½	39½	39½	39½	39½	39½
July	—	35½	—	35¼	35¼	35½	35½	35½	35½	35½	35½	35½	35½	35½	35½	35½	35½	35½	35½	35½	35½	35½	35½	35½	35½	35½	35½	35½	35½	35½	35½	35½
August	34	33¾	—	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½
Sept.	—	—	—	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½
Oct.	33⅜	—	—	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½
Nov.	35	35¼	35½	35½	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾
Dec.	40½	40¾	40¾	40¾	40¾	—	—	40½	40½	40½	40½	40½	40½	40½	40½	40½	40½	40½	40½	40½	40½	40½	40½	40½	40½	40½	40½	40½	40½	40½	40½	40½
1928																																
January	—	87¾	87¾	41¼	41¼	41¼	41¼	41	41	41	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾
February	87¾	87¾	87¾	87¾	87¾	87¾	87¾	87¾	87¾	87¾	87¾	87¾	87¾	87¾	87¾	87¾	87¾	87¾	87¾	87¾	87¾	87¾	87¾	87¾	87¾	87¾	87¾	87¾	87¾	87¾	87¾	87¾
March	29	28⅝	28⅞	28⅞	—	29	—	26¾	26¾	25½	25¾	25¾	25¾	25¾	25¾	25¾	25¾	25¾	25¾	25¾	25¾	25¾	25¾	25¾	25¾	25¾	25¾	25¾	25¾	25¾	25¾	25¾
April	—	27¼	27½	21¼	21¼	—	—	—	—	—	20	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾
May	17½	17¾	18¼	19¼	19¼	18¾	18¾	19¼	19¼	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾
June	19¾	19¾	—	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾
July	—	18⅞	18⅞	—	—	19	19	—	19¼	19½	19½	19½	19½	19½	19½	19½	19½	19½	19½	19½	19½	19½	19½	19½	19½	19½	19½	19½	19½	19½	19½	19½
August	19½	19½	—	—	19¾	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Spot Closing Prices—Ribbed Smoked Sheets

(New York Market)

Average Price per Pound for Years 1910-1921

Year	Cents	Year	Cents	Year	Cents
1910	206.60	1914	65.33	1918	60.15
1911	141.30	1915	65.85	1919	48.70
1912	121.60	1916	72.50	1920	36.30
1913	82.04	1917	72.23	1921	16.36

Average Monthly Price per Pound Since 1922

Months	1922 Cents	1923 Cents	1924 Cents	1925 Cents	1926 Cents	1927 Cents	1928 Cents
Jan.	18.82	32.73	25.86	36.71	79.50	38.75	40.25
Feb.	16.12	35.14	25.29	36.01	62.25	38.25	32.75
Mar.	14.53	34.21	22.83	41.00	59.00	41.04	26.82
Apr.	15.99	32.48	22.51	43.64	51.25	40.86	18.97
May	15.25	27.39	18.89	58.47	47.75	40.76	18.99
June	15.11	26.88	18.81	77.26	42.50	37.25	19.59
July	14.67	26.10	22.16	103.16	41.03	23.44	19.40
Aug.	**13.93**	**28.84**	**26.17**	**82.99**	**38.50**	**35.12**	
Sept.	14.44	28.95	27.56	88.88	41.00	33.67	
Oct.	19.78	26.93	31.13	98.01	42.50	34.32	
Nov.	23.88	27.14	34.33	104.80	38.50	37.58	
Dec.	27.42	26.60	37.88	98.51	38.25	40.63	
Average for Year	17.50	29.45	26.20	72.46	48.50	37.72	

London Closing Prices of Ribbed Smoked Sheet

(In Pence Per Pound)

Sixth Restriction Year—Third Quarter

Day	May	June	July	Day	May	June	July
1	8¼	9⅝	—	17	8⅝	—	9½
2	8⅝	9⅞	9½	18	8⅝	9¼	9½
3	8⅝	—	9⅞	19	8⅝	9⅜	9½
4	8¾	9⅛	9⅛	20	—	9½	9½
5	8¾	9⅛	9⅛	21	8¾	9½	9½
6	—	9¼	9⅜	22	8¾	9⅜	—
7	8¾	9⅜	9⅜	23	8⅞	9⅜	9½
8	8¾	9¼	—	24	9⅛	—	9½
9	9⅛	9¼	9½	25	9⅛	9⅜	9⅜
19	8¾	—	—	26	—	9⅜	9⅜
11	8⅞	9⅛	9⅜	27	—	9⅜	9¼
12	8⅞	9¼	9⅜	28	—	9⅜	9¼
13	—	9¼	9½	29	9½	9¼	—
14	8¾	9⅜	9½	30	9½	9⅛	9¼
15	8¼	9⅜	—	31	9½	—	9⅜
16	8¾	9⅜	9⅜				

(The average price for the period for which daily prices are reported above is approximately 9.036 pence. The British Colonial Secretary has announced that only 60% of the standard production will be exportable from the restricted area during the next quarter if the price during the entire current quarter does not average at least 21 pence.)

Average Price in Previous Quarters

Quarter	1922-23	1923-24	1924-25	1925-26	1926-27	1927-28
Nov.-Jan.	14.285	14.175	17.9983	46.709	19.265	19.023
Feb.-Apr.	16.858	12.917	19.356	28.103	19.696	12.591
May-July	14.242	10.947	38.469	21.001	18.165	
Aug.-Oct.	14.944	14.632	43.269	20.199	16.620	

Spot Closing Cotton Prices

(Middling Upland Grade—New York Market)

Recent Daily Price Per Pound

Day of Month	July	Aug.	Day of Month	July	Aug.	Day of Month	July	Aug.
1	——	19.90	11	22.25	——	21	21.10	——
2	22.80	19.70	12	22.20	——	22	——	——
3	22.35	19.85	13	21.95	——	23	21.05	——
4	——	19.95	14	22.00	——	24	20.90	——
5	22.75	——	15	——	——	25	21.10	——
6	22.85	19.65	16	21.60	——	26	21.15	——
7	22.75	——	17	21.50	——	27	21.05	——
8	——	——	18	21.70	——	28	21.05	——
9	21.95	——	19	21.55	——	29	——	——
10	22.20	——	20	21.20	——	30	20.95	——
						31	20.45	——

Average Monthly Price Per Pound

Month	1926 Cents	1927 Cents	1928 Cents	Month	1926 Cents	1927 Cents	1928 Cents
Jan.	20.85	13.42	19.12	Aug.	18.57	20.04	
Feb.	20.60	14.10	18.40	Sept.	17.02	21.95	
Mar.	19.35	14.32	19.38	Oct.	13.14	20.55	
Apr.	19.13	14.75	20.63	Nov.	12.86	20.22	
May	18.92	16.07	21.58	Dec.	12.68	19.58	
June	18.57	16.85	21.50	Average for Year	17.53	17.49	
July	18.71	18.00	21.36				

Stock of Crude Rubber in the U. S.

(All Quantities in Long Tons)

At	ON HAND			AFLOAT			ON HAND AND AFLOAT		
End of	1926	1927	1928	1926	1927	1928	1926	1927	1928
Jan.	55,198	76,172	110,244	46,296	45,312	41,256	100,484	121,484	151,500
Feb.	58,035	91,186	108,955	46,935	42,166	43,316	104,970	133,352	152,271
March	61,822	85,740	114,061	43,567	49,600	39,324	105,389	135,340	153,385
April	55,261	92,757	113,083	41,905	38,963	33,986	97,166	131,720	147,069
May	64,360	94,563	105,356	40,303	44,181	34,374	104,663	138,744	139,730
June	60,460	89,250	90,198	40,907	47,233	40,001	101,367	136,483	130,119
July	64,900	98,469		38,062	40,587		102,962	139,056	
Aug.	60,870	96,148		37,360	40,937		98,230	137,085	
Sept.	62,078	97,829		42,464	37,966		105,542	135,793	
Oct.	64,089	97,452		52,930	42,804		117,919	140,256	
Nov.	69,385	101,034		47,311	37,076		116,696	138,110	
Dec.	72,520	100,130		52,020	47,938		124,540	148,068	

(Rubber Association of America figures raised to 100%.)

Stock of Crude Rubber in London

(No. of tons in Wharves and Warehouses, including Latex)

At end of:	1920	1921	1922	1923	1924	1925	1926	1927	1928
Jan.	19,300	56,573	67,252	73,498	57,460	27,172	9,994	54,994	66,524
Feb.	18,329	59,439	67,623	70,483	56,732	23,425	10,004	58,826	62,964
Mar.	18,969	63,913	66,670	63,438	55,647	18,104	13,127	63,055	58,272
Apr.	20,072	68,759	68,637	58,770	54,559	12,949	18,773	66,897	53,425
May	20,921	70,403	70,146	54,439	51,615	5,895	20,384	67,169	
June	22,517	69,408	71,597	51,050	51,115	5,318	23,984	63,902	
July	25,346	71,065	71,515	49,937	52,073	4,258	27,727	63,717	
Aug.	30,674	73,211	72,112	58,427	49,700	4,619	30,165	64,491	
Sept.	35,504	72,175	70,977	54,523	44,011	5,453	35,077	68,236	
Oct.	41,743	69,229	68,536	58,891	37,523	5,086	42,138	69,569	
Nov.	45,550	70,786	68,548	60,074	33,593	3,869	44,057	67,050	
Dec.	50,652	69,792	72,299	60,246	29,488	5,697	48,918	63,793	

At End of Recent Weeks

	First Saturday	Second Saturday	Third Saturday	Fourth Saturday	Fifth Saturday
1927					
August	64,177	64,557	64,842	64,259	———
September	65,162	66,148	66,664	67,253	———
October	68,519	70,167	70,916	70,060	69,551
November	69,660	69,501	69,850	67,318	———
December	65,869	66,011	64,761	63,397	63,207
1928					
January	64,360	65,524	65,450	66,285	———
February	65,909	64,945	63,769	63,103	———
March	61,978	61,920	61,033	59,644	58,197
April	58,732	58,945	56,819	53,360	———
May	52,015	50,837	48,705	44,628	———
June	43,716	42,683	41,185	40,083	38,611
July	36,915	35,925	35,238	35,445	———

Rubber in Singapore and Penang

(Stocks held by Dealers—Quantities in Long Tons)

End of	1926	1927	1928	End of	1926	1927	1928
Jan.	16,726	25,440	25,868	July	23,101	22,558	
Feb.	13,653	26,766	22,867	Aug.	23,362	25,764	
Mar.	18,389	27,844	20,538	Sept.	25,997	25,178	
Apr.	16,328	24,543	16,946	Oct.	26,614	25,790	
May	16,967	25,133	17,437	Nov.	25,486	28,369	
June	19,416	21,898	18,207	Dec.	26,443	25,798	

Rims Inspected and Passed in U. S.

(Tire and Rim Association Reports)

	Total	Per Cent Balloons		Total	Per Cent Balloons
1922	16,297,735	0.0	1925	26,001,664	66.8
1923	23,140,620	0.6	1926	24,199,524	78.8
1924	21,863,311	19.7	1927	19,700,003	79.1
1927			1928		
July	1,679,587	84.4	January	1,811,534	87.8
August	1,825,905	80.2	February	1,806,437	86.5
September	1,727,122	77.7	March	2,420,084	86.4
October	1,354,924	81.4	April	2,316,324	88.4
November	838,591	67.8	May	2,185,592	84.0
December	1,134,421	80.0	June	2,429,453	83.1

U. S. Consumption of Gasoline

(In Barrels of 42 Gallons)

MONTHS	1924	1925	1926	1927	1928
January	11,918,000	14,386,000	17,582,000	17,888,000	20,939,000
February	9,626,000	13,210,000	15,814,000	18,240,000	21,136,000
March	10,961,000	14,890,000	19,302,000	22,464,000	24,041,000
April	14,583,000	19,013,000	20,848,000	23,371,000	25,712,000
May	15,889,000	20,459,000	24,213,000	26,579,000	27,355,000
June	16,421,000	20,724,000	23,803,000	27,799,000	29,022,000
July	18,610,000	22,879,000	24,752,000	29,784,000	
August	19,825,000	22,323,000	26,912,000	29,779,000	
September	16,871,000	20,177,000	22,929,000	28,409,000	
October	18,029,000	19,826,000	23,973,000	25,497,000	
November	16,607,000	18,024,000	20,618,000	24,400,000	
December	15,663,000	17,954,000	21,419,000	23,718,000	
TOTAL	185,003,000	223,865,000	262,165,000	297,928,000	

U. S. Tire and Tube Statistics

(All Figures Represent Thousands)

AUTOMOBILE CASINGS

Figures for Recent Years

	1922	1923	1924	1925	1926	1927
Production	40,932	45,259	51,633	60,845	61,237	64,439
Shipments	39,987	45,204	50,120	59,262	59,002	64,059
Inventory[2]	6,132	5,772	7,427	8,142	10,456	10,264

Figures for Recent Months

	PRODUCTION			SHIPMENTS			INVENTORY		
	1926	1927	1928	1926	1927	1928	1926	1927	1928
Jan.	4,587	4,965	5,491	2,974	4,932	5,394	9,947	10,432	9,949
Feb.	4,865	5,095	6,363	3,436	4,458	5,031	11,164	11,075	11,721
Mar.	5,456	6,276	6,819	4,561	5,701	5,731	12,004	11,583	12,389
Apr.	5,346	6,299	6,178	4,980	5,701	5,812	12,461	12,122	12,717
May	5,023	6,151	6,759	5,211	5,657	6,457	12,343	12,462	13,024
June	5,422	6,202		5,724	6,253		11,968	12,462	
July	4,950	5,087		6,337	5,973		10,592	11,326	
Aug.	5,872	5,752		6,744	6,393		9,732	10,721	
Sept.	5,706	4,822		6,040	5,717		9,318	9,722	
Oct.	5,103	4,773		4,544	4,799		9,917	9,665	
Nov.	4,324	4,502		3,733	4,306		10,297	10,136	
Dec.	4,683	4,497		4,718	4,165		10,456	10,264	

AUTOMOBILE INNER TUBES

Figures for Recent Years

	1922	1923	1924	1925	1926	1927
Production	50,850	60,116	70,706	82,614	76,618	70,823
Shipments	49,673	59,072	68,016	81,004	71,591	72,896
Inventory[2]	7,643	8,425	11,052	11,313	16,200	13,692

Figures for Recent Months

	PRODUCTION			SHIPMENTS			INVENTORY		
	1926	1927	1928	1926	1927	1928	1926	1927	1928
Jan.	6,809	5,337	5,441	3,723	6,016	6,072	14,361	15,585	12,982
Feb.	6,825	5,658	6,895	3,736	5,120	5,431	17,090	16,075	14,650
Mar.	7,030	7,184	6,231	4,987	6,157	5,731	19,131	17,096	15,573
Apr.	6,554	7,373	6,661	5,051	6,359	5,702	20,674	17,801	16,638
May	6,149	6,737	7,168	6,304	6,140	6,300	21,141	18,389	17,702
June	6,171	6,306		6,898	6,832		20,243	17,858	
July	5,729	5,284		8,569	7,070		17,267	16,004	
Aug.	7,424	6,480		9,579	7,983		15,462	14,664	
Sept.	7,590	5,651		7,762	6,758		15,312	13,511	
Oct.	6,208	5,065		5,474	5,024		15,929	13,539	
Nov.	4,852	4,775		4,045	4,723		16,604	13,585	
Dec.	5,277	4,969		5,463	4,712		16,200	13,692	

(1) Rubber Association of America figures, raised to 100%. The Association estimates its figures to be 75% representative or complete when issued and that basis has been accepted when preparing the statistics in this table.
(2) Held by manufacturers at end of period indicated.

Automobile Production

	United States			Canada			
	Total	Passenger Cars	Trucks	Total	Passenger Cars	Trucks	Grand Total
1921	1,595,304	1,452,902	142,402	66,246	61,098	5,148	1,661,550
1922	2,547,208	2,302,923	244,285	102,053	94,904	7,149	2,649,261
1923	4,020,255	3,631,728	388,527	146,438	129,228	17,210	4,166,693
1924	3,600,918	3,203,049	397,869	135,246	117,765	17,481	3,736,164
1925	4,265,704	3,760,459	505,245	161,389	139,311	22,078	4,427,093
1926	4,298,799	3,808,753	490,046	205,092	164,483	40,609	4,503,891
1927							
Jan.	238,926	199,650	39,276	15,376	11,745	3,631	254,302
Feb.	304,758	264,171	40,587	18,655	14,826	3,829	323,413
March	394,430	345,911	48,519	23,250	19,723	3,527	417,680
April	404,743	357,009	47,734	24,611	20,890	3,721	429,354
May	404,099	357,148	46,951	25,708	21,991	3,717	429,807
June	321,959	278,728	43,231	19,208	16,470	2,738	341,167
July	268,474	236,866	31,608	10,987	8,719	2,268	279,461
Aug.	308,807	274,378	34,429	12,526	10,139	2,387	321,333
Sept.	260,420	226,440	33,980	11,262	8,681	2,581	271,682
Oct.	219,712	183,041	36,671	7,791	6,236	1,555	227,503
Nov.	134,381	109,742	24,639	6,617	5,173	1,444	140,998
Dec.	137,178	105,784	27,394	3,435	2,277	1,158	136,613
TOTAL	3,393,887	2,938,868	453,019	179,426	146,870	32,556	3,573,313
1928							
Jan.	225,039	199,032	26,007	8,463	6,705	1,758	282,502
Feb.	323,368	290,830	32,358	12,504	10,315	2,189	335,872
March	412,825	371,408	41,417	9,724	7,478	2,246	422,549
April	409,948	364,877	45,071	24,240	20,546	3,694	434,188
May	425,990	375,798	50,192	33,942	29,764	4,178	459,932
June	321,967	278,729	43,238	19,208	16,470	2,738	341,175
July							
Aug.							
Sept.							
Oct.							
Nov.							
Dec.							

Exports of Crude Rubber from Principal Producing Countries

(*Long Tons*)

	BRITISH MALAYA[1]							DUTCH EAST INDIES[3]							
	Gross Exports	Imports	Gross Exports Minus Imports	Ceylon[2]	India & Burma[3]	Sarawak[4]	British North Borneo[5]	Siam[4]	Java & Madura	Sumatra E. Coast	Other D.E.I.	Indo-China[3]	Amazon Valley	All Other[6]	World Total[7]
1923	252,016	70,432	181,584	39,971	6,416	5,705	4,237	1,718	32,930	46,344	57,822	5,067	16,765	7,856	406,955
1924	259,706	108,524	151,182	39,997	7,697	6,699	4,621	2,962	42,446	54,497	80,347	6,688	23,165	9,065	429,366
1925	316,825	158,022	158,803	49,566	10,082	5,424	5,377	5,377	46,757	65,499	120,626	7,881	25,298	13,797	517,523
1926	391,328	151,243	240,085	58,962	9,874	9,155	6,079	4,027	52,186	71,413	121,231	8,203	24,298	16,017	621,530
1927	371,322	182,845	188,477	55,356	11,321	10,923	6,582	5,472	55,297	77,815	142,171	8,645	28,782	15,633	606,474
1926:															
Apr.	23,727	10,565	13,162	3,766	590	679	374	293	4,226	4,598	6,285	410	2,318	1,529	38,230
May	31,231	10,604	20,627	3,944	691	927	410	279	4,440	5,358	8,737	502	1,353	1,464	48,732
June	30,624	11,764	18,860	4,208	452	779	512	275	4,444	6,125	10,614	549	1,213	1,279	49,310
July	28,824	15,280	13,544	4,422	938	911	498	439	4,618	5,612	13,112	1,521	1,565	1,148	48,328
Aug.	34,625	13,595	21,030	5,666	521	890	476	316	4,132	5,699	10,390	378	1,888	1,097	52,483
Sept.	35,913	13,972	21,941	6,015	651	888	689	457	4,065	6,568	11,391	681	2,156	822	56,324
Oct.	39,367	15,203	24,164	5,672	634	805	473	385	4,058	6,998	11,491	661	1,904	1,023	58,268
Nov.	34,302	12,201	22,101	4,228	1,110	685	547	285	3,988	5,816	9,422	718	1,911	1,259	52,070
Dec.	36,811	14,716	22,095	6,498	1,176	895	617	338	5,054	7,117	12,786	790	3,821	714	61,901
1927:															
Jan.	34,946	14,995	19,951	6,697	921	959	585	304	4,187	6,706	10,690	941	3,482	981	56,404
Feb.	27,528	11,697	15,831	3,571	1,469	552	445	360	4,078	6,526	10,535	675	2,104	1,098	47,244
Mar.	41,346	17,464	23,882	7,142	1,124	997	639	432	5,657	7,004	12,905	733	3,178	1,791	65,484
Apr.	29,041	13,069	15,972	3,349	723	984	452	526	4,666	5,531	10,197	557	2,451	1,520	46,928
May	31,393	15,491	15,902	3,124	760	786	415	348	5,430	5,529	13,410	586	2,460	1,207	49,957
June	32,607	14,706	17,901	3,348	856	1,100	539	409	4,818	5,518	9,109	772	889	1,731	46,990
July	23,947	12,697	11,250	4,018	827	859	544	333	4,771	6,142	11,566	519	1,757	1,113	43,699
Aug.	30,371	17,105	13,266	5,357	688	1,133	623	546	4,355	6,682	12,440	716	1,928	969	48,703
Sept.	29,835	12,095	17,740	4,911	479	645	566	498	3,635	5,957	9,853	497	2,072	1,213	48,066
Oct.	29,846	15,801	14,045	5,245	802	721	591	542	3,810	7,755	13,633	775	2,752	939	51,520
Nov.	28,277	19,860	8,417	4,464	1,277	1,241	591	600	4,127	6,587	14,395	683	2,369	1,627	46,378
Dec.	32,185	17,865	14,320	4,130	1,395	946	592	664	5,763	7,878	13,438	1,191	3,340	1,444	55,101
1928:															
Jan.	27,731	16,618	11,113	4,352	1,605	842	500*	525	4,851	7,988	11,360	720	2,273	1,025	47,154
Feb.	28,813	12,911	15,902	4,353	1,081	667	500*	536	4,052	6,757	8,635	723	1,612	1,276	46,094*
Mar.	27,813	10,508	17,305	3,460	775	645	500*	269	3,999	5,826	9,690	613	2,750	1,211	47,043*
Apr.	20,029	9,335	10,694	3,460	789	630	500*	258	3,993	5,040	5,538	518	1,014	1,323	33,757
May	26,403	10,350	16,053	3,125	654	842	500*	241	4,943	5,355	10,382	619	2,062	1,200*	45,976*
June	22,930	16,168	6,762	3,125	963	926	500*	451	5,419	5,863	13,623	902	1,399	1,200*	41,133*

(1) Mayalan net exports cannot be taken as production, since imported rubber is largely wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 115 tons in 1923, 1,117 in 1924, 3,618 in 1925, 3,263 in 1926, and 2,439 in 1927. (2) Ceylon Chamber of Commerce statistics until 1926; rubber exported as latex is not included—such shipments were equivalent to 18 tons in 1923, 93 tons 1924, 6 tons 1925, 20 tons in 1926, and about ½ ton in 1927. (3) Official statistics. (4) Imports into Singapore and Penang. (5) Exports from "Other D.E.I" are chiefly wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 2,342 tons in 1923, 1,008 tons 1924, 2,239 tons 1925, 44 tons in 1926, and 84 tons in 1927. (6) Calculated from official import statistics of principal consuming countries, viz., United States, United Kingdom, France, Germany, Belgium and Netherlands. This figure includes guayule rubber. (7) This total includes the third column for British Malaya, "Gross Exports minus Imports," and all the figures shown for the other territories. *Figure is provisional; final figure will be shown immediately it becomes available.

Net Imports of Crude Rubber into Principal Manufacturing Countries

(*Long Tons*)

	United States*	United Kingdom	France (h)	Germany	Canada (ac)	Japan (ac)	Italy	Russia (ce)	Australia (ed)	Belgium (d)	Netherlands	Scandinavia (abcdf)	Spain (g)	Czechoslovakia (abcd)	World Total
1919	236,977	42,671	17,685	5,584	6,395	9,753	9,894	75	1,002	3,995	2,771	3,149	2,418	9	342,378
1920	248,762	56,844	13,885	11,890	11,746	5,297	6,123	62	1,815	3,840	5,510	2,292	2,008	567	370,641
1921	179,678	42,087	15,135	21,920	8,124	21,713	3,906	165	1,014	1,705	1,022	1,279	2,245	569	300,562
1922	296,267	11,724	24,352	27,546	9,207	15,934	6,430	2,493	2,643	172	-8,807	1,778	589	567	395,885
1923	300,372	12,700	27,392	18,519	13,277	15,372	8,489	2,986	1,649	2,184	792	2,528	630	1,128	408,018
1924	317,747	-11,550	30,446	22,727	14,299	19,571	8,764	2,346	3,124	2,685	-807	3,178	944	1,370	414,847
1925	381,815	4,061	32,956	33,937	19,683	11,117	11,412	7,088	4,757	2,930	875	3,149	1,155	1,558	516,493
1926	395,667	84,865	34,240	22,775	20,229	18,128	9,809	6,529	9,021	2,498	2,670	4,046	1,299	1,870	613,648
1926:															
April	33,416	8,275	4,121	1,781	1,615	1,868	865	402	505	71	93	335	130	193	53,670
May	28,705	6,773	2,519	1,848	1,239	1,010	705	200	468	186	241	225	60	192	44,371
June	28,795	5,894	2,196	1,655	1,188	1,465	1,070	983	636	269	215	303	123	103	39,895
July	34,266	6,768	2,352	2,202	1,552	1,447	800	132	702	295	480	292	121	115	51,524
August	26,081	7,327	2,457	2,110	1,888	1,284	796	655	1,275	303	594	336	90	151	45,347
September	35,675	8,843	1,774	2,029	1,355	1,922	819	472	1,241	283	429	317	91	138	55,388
October	28,110	8,082	3,876	2,423	1,865	2,396	645	585	1,004	301	2	360	100	121	49,370
November	37,673	9,247	2,719	3,007	1,548	3,380	832	568	916	194	-18	358	90	181	60,695
December	35,850	4,749	2,890	2,562	1,847	856	439	725	777	248	156	443	151	306	51,999
1927:															
January	41,815	10,192	3,284	2,481	1,936	1,227	672	803	929	296	192	316	139	100	64,382
February	25,886	7,692	3,263	3,103	2,620	1,902	601	907	460	502	152	336	146	210	47,780
March	32,782	9,049	2,050	3,475	3,760	1,578	852	784	780	454	86	385	137	127	56,269
April	44,627	7,875	2,310	2,393	1,509	2,181	781	1,972	762	448	58	230	177	218	65,541
May	33,736	2,896	2,006	3,380	2,519	1,084	913	887	694	626	-57	335	155	223	49,402
June	31,270	2,282	2,387	3,632	2,086	798	942	1,506	557	583	-17	243	164	183	46,616
July	35,719	1,116	2,384	2,899	2,104	1,505	1,007	415	900	429	66	227	177	236	49,184
August	31,001	3,463	2,795	3,119	2,013	1,970	1,274	386	650	604	-63	312	138	123	47,785
September	29,801	7,800	1,956	2,891	1,850	2,025	684	518	772	552	-33	451	155	272	49,694
October	27,671	5,888	3,479	4,202	1,790	1,966	1,021	1,075	908	465	156	401	153	363	49,538
November	36,128	1,687	3,661	4,209	1,916	1,575	1,167	1,312	836	749	298	474	246	317	54,570
December	28,082	309	4,696	3,108	2,302	2,710	1,462	1,453	1,242	784	-202	514	268	300	47,028
	398,483	60,249	34,271	38,892	26,405	20,521	11,381	12,018	9,490	6,492	636	4,224	2,055	2,672	627,786
1928:															
Jan.	37,120	1,921	1,764	2,485	2,290	1,361	760	995	802	589	52	261	335	376	51,111
Feb.	30,926	3,143	2,526	2,984	2,553	1,258	437	159	616	599	98	307	296	297	46,199
Mar.	36,970	3,179	1,902	3,521	2,989	1,707	763	1,468	918	816	95	351	497	398	55,574
April	35,686	—2,280	2,204	2,719	1,988	2,353	1,115	926	832	575	280	339	304	159	47,150
May	28,659	—5,323	3,210	2,944	2,180	2,306	1,095	744	655	746	209	485			
June	25,143	—3,031		2,968	2,632				348		133				

a—Including gutta percha. b—Including balata. c—Re-exports not deducted in monthly statistics. d—Including some scrap and reclaimed rubber. e—German, United Kingdom, and United States exports to Russia. f—Including Norway, Sweden, Denmark and Finland. g—United Kingdom and French exports to Spain except in years prior to 1925. h—French imports have been reduced 12 per cent in order to eliminate imports of gutta percha and to reduce to basis of net weight. *United States imports of guayule are not included in this compilation; such imports amounted to 4,305 tons in 1926 and to 5,019 tons in 1927.

BOOK REVIEWS

BIBLIOGRAPHY ON RUBBER TECHNOLOGY. June, 1926-December, 1927. Compiled by the Rubber Committee of the Special Libraries Association. Bulletin No. 7. 1928. 82 pp.

This valuable bibliography is an important addition to rubber literature and constitutes a highly estimable reference book for the rubber technologist. The booklet supplements a previous volume published in 1926 and brings the bibliographical record on the subject of rubber up to date. It lists the principal articles on the source, composition, testing, manufacturing of rubber products and the sources of information on reclaimed and synthetic rubber. With this volume and the previous one, the trend of the scientific and technical progress in the rubber industry may be followed from 1924 to 1927. Copies of the bulletin may be had from the Special Libraries Association, 11 Nesbit street, Providence, R. I. The work is largely the effort of Edith L. Shearer, Chairman of the rubber committee of the Association and consulting librarian of the Western Union Telegraph Company, New York City.

THE YEARBOOK OF AGRICULTURE. 1927. Published by the U. S. Department of Agriculture, Washington, D. C. Government Printing Office.

The section of this annual publication which would appeal to the rubber industry is contained between pages 562-5, wherein the Department reviews briefly the experiments with various types of rubber producing plants at agricultural experiment stations in this country, mentioning guayule, the Assam rubber tree, two species of Madagascar rubber vines, species of desert milkweeds, and Eucommia. Mechanical and chemical methods of extracting rubber from plants probably must be used if the production of rubber is to become a practical possibility in the United States.

United States Imports of Guayule Rubber and Related Gums

(All quantities in Long Tons)

	Guayule		Balata		Jelutong		Gutta Percha	
	Tons	Dollars	Tons	Dollars	Tons	Dollars	Tons	Dollars
1919	1,430	760,690	727	937,038	8,332	2,213,964	2,900	1,068,698
1920	758	345,985	1,064	1,260,043	5,672	2,068,501	3,183	1,520,309
1921	58	26,945	814	1,077,859	1,745	351,893	985	333,564
1922	127	57,040	812	978,765	2,335	403,812	818	281,012
1923	1,155	542,227	700	898,524	4,565	853,308	912	375,167
1924	1,356	536,392	464	568,456	6,165	1,237,100	1,408	463,610
1925	3,781	1,803,448	517	574,750	6,749	1,642,531	1,603	629,284
1926	4,305	2,562,096	354	327,213	7,263	3,127,757	1,445	661,156
1927	5,018	2,674,957	582	447,246	7,785	2,448,657	1,494	728,172
1928:								
Jan.	432	242,389	27	24,218	588	183,705	150	86,702
Feb.	489	281,295	33	32,165	403	142,621	312	215,085
Mar.	575	365,927	32	26,460	829	388,616	115	57,833
Apr.	512	312,131	47	32,924	592	174,970	68	27,627
May	452	233,414	—	——	679	226,064	100	42,762
June	424	220,081	9	6,799	293	91,152	28	12,374

Reclaimed Rubber in the United States

(All Quantities in Long Tons—100% Basis)

		Consumption					Consumption		
	Produc-		% to	Stocks*		Produc-		% to	Stocks*
Year	tion	Tons	Crude		Year	tion	Tons	Crude	
1919	81,366	73,535	36.3	.....	1924	80,079	76,072	22.4	.....
1920	86,395	75,297	38.4	.....	1925	132,930	137,105	35.6	13,203
1921	36,725	41,351	24.1	.....	1926	180,582	164,500	45.9	23,218
1922	57,834	54,458	19.3	.....	1927	189,144	178,471	47.6	24,980
1923	74,766	69,534	22.7	.....					
1927:									
Jan.	16,526	12,374	39.3	25,903	July	15,488	13,842	47.4	26,599
Feb.	15,860	14,424	47.8	27,291	Aug.	15,109	15,836	47.3	25,157
Mar.	16,788	13,528	37.4	27,124	Sept.	14,392	14,790	54.3	23,429
Apr.	14,483	16,677	46.5	25,712	Oct.	16,127	17,292	64.5	22,176
May	16,159	15,754	46.1	26,419	Nov.	15,477	14,876	55.5	21,728
June	16,652	15,547	46.0	25,811	Dec.	16,083	13,431	52.7	24,980
1928:									
Jan.	14,862	18,134	52.7	21,941	July				
Feb.	15,291	16,808	49.9	20,848	Aug.				
Mar.	17,069	18,619	52.2	19,558	Sept.				
Apr.	15,393	17,355	52.9	19,283	Oct.				
May	18,945	18,201	48.8	18,137	Nov.				
June	18,781	16,328	48.4	18,709	Dec.				

*Stocks on hand at the end of month or year. Exports of reclaimed rubber, not shown in this table, amounted to 8,540 tons in 1927.

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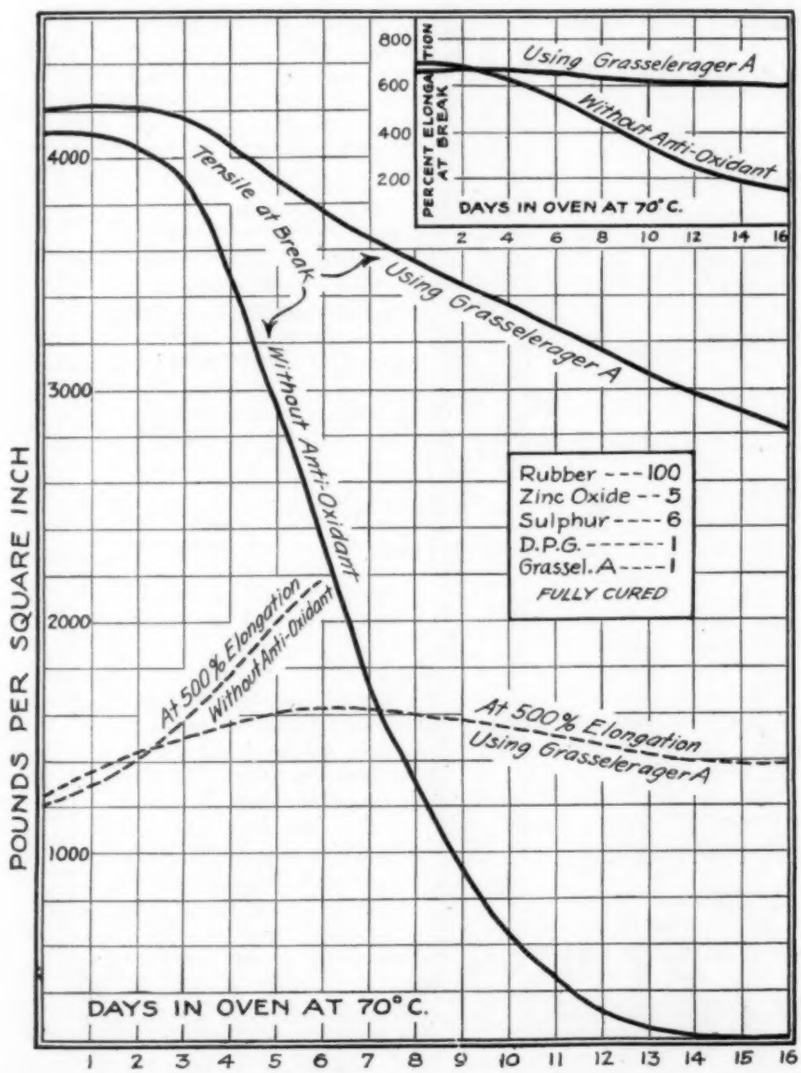

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